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**Review of the
Draft Environmental Assessment
August 2011 Competitive Oil and Gas
Lease Sale
U.S. Department of the Interior
Bureau of Land Management
Kremmling Field Office
Colorado**

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Background

The BLM Kremmling Field Office plans to offer subsurface federal mineral parcels for competitive oil and gas leasing. The parcels recommended for leasing total approximately 3000 acres of Federal mineral estate administered by the Kremmling Field Office. Four parcels are in Grand County and two parcels, totaling 160 acres, are in Jackson County. All of the parcels in Grand County are on privately owned surface with Federal minerals, known as 'split estate lands' where the surface owner does not own the subsurface mineral rights. BLM asserts that the proposed action conforms to the Kremmling Resource Management Plan (RMP) and Environmental Impact Statement approved in 1984, updated 1999. BLM had prepared this broad planning document to comply with the provisions of the National Environmental Policy Act (NEPA). BLM states that the current "...Proposed Action is in conformance with their prior RMP and EIS, *even though it is not specifically provided for*, because it is consistent with their finding in that RMP that federal mineral estates will remain open" to oil and gas leasing under the 1920 Mineral Leasing Act. (emphasis added)

Since 2007, the BLM Kremmling Field Office has been in the process of preparing another revised Resource Management Plan/EIS that will evaluate all the federal surface and mineral estate managed by BLM within the field office boundary. This updated RMP/EIS is expected to be released in late spring 2011.

Summary of author's findings

The August 2011 Competitive Oil and Gas Lease Sale EA fails to meet the requirements of NEPA because neither this EA nor the preceding RMP/EIS nor the Statewide Oil and Gas EIS of 1991 evaluated modern shale oil or shale gas technology. Not until this decade did the industry master the techniques needed to release oil from shales. This is an unstudied and untested new technology not previously analyzed by the BLM in its prior NEPA documents.

It is likely that the parties that nominated leasing of these federal minerals are seeking to hydrocarbon targets in Upper and Lower Cretaceous section including the Sundance, Entrada, Frontier, and the Niobrara Shale Formations. Last year, the Niobrara Formation in Weld County, Colorado and Laramie County, Wyoming produced large volumes of oil and minor amounts of natural gas using the modern and unevaluated techniques of

horizontal drilling combined with hydraulic fracturing using gelled fracking agents.

Developing industrial shale gas and shale oil projects in Grand County using current practices is likely to degrade surface water and groundwater quality, to harm humans, and to negatively impact aquatic ecosystems.

Approximately 1 of 50 natural gas or oil wells could impact local groundwater during development. The probability that shale gas and shale oil wells will degrade local water quality over a fifty-year period is high.

Some chemicals used for drilling muds, hydraulic fracturing, and flow-back waters associated with shale gas and shale oil drilling constitute human health and environmental hazards even when the chemicals are extremely diluted.

Recommended corrections to the BLM needed to fully disclose the impacts in order to meet their obligations under NEPA and to evaluate means to reduce these environmental and human health risks.

1. BLM should withdraw this EA pending completion of its updated RMP. BLM should not take this irrevocable action which would limit the choice of alternatives. A revised NEPA analysis should evaluate alternative lease stipulations to be applied to these parcels to reduce potential environmental damage that might occur using standard leasing stipulations.
2. The updated RMP must thoroughly analyze the emerging modern technology of developing shale oil in the Niobrara Formation using horizontal drilling combined with high volume hydraulic fracturing.
3. The revised EA should be coordinated with the Colorado Oil and Gas Conservation Commission (COGCC) to determine if COGCC intends to define the area as a 'sensitive use determination'. Such a designation by the COGCC requires the use of 'green completion' technologies which involves the use of enclosed tanks to contain all drilling fluids and limits the time period when fracking fluids can be retained in any pit.
4. The revised EA, once it has been tiered to a properly completed and updated RMP/EIS, should evaluate whether to require 'green completion' technology as a discretionary performance-based lease stipulation. BLM should expand upon this concept to include the possible use of 'green' or less toxic hydraulic fracturing fluids.

5. The BLM should consider a discretionary performance-based lease stipulation to require three ground water monitoring wells near production wells or well pads; one up-gradient and two monitoring wells down-gradient in the uppermost useable aquifers.

Recommendations to improve the analysis in the BLM EA and to evaluate leasing stipulations to reduce these risks.

Recommendation 1: BLM should withdraw this EA pending completion of its updated RMP. BLM should not take this irretrievable action which would limit the choice of alternatives. A revised NEPA analysis should evaluate alternative lease stipulations that might be applied to these parcels to reduce potential environmental damage that might occur using standard leasing stipulations.

Despite the claim in the EA that federal and state restrictions on oil and gas development reduce the risks to the natural environment, natural gas and oil exploration and production impose near certainty of environmental harm. Data from Colorado indicated that 1549 spill incidents related to natural gas extraction activities occurred in a five year period between January 2003 and March 2008. The Congressional Sportsmen's Foundation estimated that 20% of these impacted groundwater. The New Mexico Oil Conservation Division recorded 705 groundwater-contaminating incidents between 1990 and 2005 by the oil and gas industry. And the Pennsylvania Land Trust reported 1610 violations in Pennsylvania between January 2008 and August 2010, 1052 of them likely to have impacted the environment. Compared with totals for producing gas wells of 25,716, 40,157 and 55,631 in Colorado, New Mexico and Pennsylvania, respectively, these data suggest that natural gas development degrades groundwater quality at a rate of 1.2 to 1.9 incidents per 100 gas wells.

Immediate damage from spills and improperly constructed wells create short-term environmental risks. Over a longer time period, other risks will develop. In 1992, the EPA estimated that of 1.2 million abandoned oil and gas wells in the United States, 200,000 were leaking. Canadian research has shown that concrete shrinkage leads to well casing fissures nearly impossible to avoid after fifty years. This can provide a pathway for formation gases and other fluids to re-pressurize the deteriorating wells. Natural gas well casings will fail over time, especially longer than fifty years.

A complex array of chemicals are used for natural gas and oil development in 'non-conventional' formations. First, combinations of chemicals are added to the drilling muds used to drill the bore hole. Chemicals are added to

Increase the density of the fluids to facilitate boring, to reduce friction, and to facilitate the return of drilling debris to the surface. After drilling, hydraulic fracturing is done to break up the rock matrix to allow the methane or oil to escape, increasing well productivity.

The hydraulic fracturing fluids are approximately 99 to 99.5 percent water and sand, and typically contain chemical additives that are needed to increase viscosity, act as biocides, clay inhibitors, scaling inhibitors, acidifiers, breaking agents and corrosion prevention. In Niobrara producing wells in Weld County, Colorado, approximately 1.0 million or more gallons of fluid containing toxic chemicals are injected underground during each fracking operation. The total chemical portion of the fracking fluid at one-half of one percent means that approximately 5000 gallons of chemical additives are included in each fracking event that uses 1.0 million gallons of fracking fluid. Niobrara wells in Weld County have been hydraulically fractured using ten fracturing stages per well. An estimated one half to two-thirds of the fracking fluid is returned to the surface during well completion and subsequent production bringing with it toxic gases, liquids, and solid material naturally present in underground oil and gas deposits.

As of May, 2010 researchers at The Endocrine Disruptor Exchange (TEDX) identified 944 products used in natural gas operations in the U.S. However, little was known about 43 percent of these products, since less than one percent of the total product composition was available. For those 407 products, only the name of the product with no identifiable chemical name or percent composition was reported. These researchers were able to locate CAS numbers for 353 products. (Note: CAS numbers refers to a unique identifier assigned to known substances by the Chemical Abstracts Service Registry.)

Using the health effect information for the 353 chemicals with CAS numbers, the TEDX researchers created a profile of possible health effects that depicts the percentage of chemicals associated with each of the twelve health effect categories. Three fourths of the chemicals on the list affect the skin, eyes, and other sensory organs, the respiratory system, the gastrointestinal system and the liver. Over half the chemicals show effects in the brain and nervous system. More than one quarter of the chemicals can cause cancer and mutations. Notably, 37% of the chemicals can affect the endocrine system that encompasses multiple organ systems including those critical for normal reproduction and development.

Many chemical products are used in the development of a gas or oil well. Some examples, along with their most common applications, are shown in Table 1.

Table 1. Examples of Additive Functions in Shale Gas Extraction

<u>Additives</u>	<u>Examples</u>	<u>Purpose</u>
Friction reducers	heavy naphtha	penetrate fissures
Biocides	glutaraldehyde, DBNPA	prevent biofilms
Scale inhibitor	ethylene glycol	prevents chemical scaling
Corrosion inhibitor piping	propargyl alcohol	prevent corrosion of
Surfactant	2-butoxyethanal (2-BE)	promote fracturing
Breaker promote	ammonium persulfate	alters viscosity to flow-back
Cleaners	hydrochloric acid	dissolves formation debris
Processors	propylene glycol	strips impurities from produced gas

These drilling additives including ammonia, methanol, ethanol, 2-propanol, 1-butanol, thioglycolic acid, sodium perborate tetrahydrate, diammonium peroxydisulfate and hydrochloric acid, are moderately or acutely toxic to humans or aquatic organisms when encountered in concentrated forms. Significant issues with these chemicals would be anticipated from storage sites, trucking accidents while they are being transported to remote well sites via rural roads, and staging at well sites.

However, the majority of chemical products used by the gas industry for hydraulic fracturing have not been fully tested for human or environmental toxicity. Of those which have, a minority (e.g., bentonite, guar gum, hemicellulase, citric acid, acetic acid, potassium carbonate, sodium chloride, limonene, polyethylene glycol and mineral oil) pose no significant hazards to humans or other organisms as utilized in gas extraction processes.

A few chemical products in widespread use in the industry pose significant hazards to humans or other organisms, because they cause adverse health effects even at concentrations near or below their chemical detection limits. These include the biocides glutaraldehyde, 2,2-dibromo-3-nitrilopropionamide (DBNPA) and 2,2-dibromoacetonitrile (DBAN), the

corrosion inhibitor propargyl alcohol, the surfactant 2- butoxyethanol (2-BE), and lubricants containing heavy naphtha. Glutaraldehyde (CAS No. 111-30-8) is a biocide used widely in drilling and fracturing fluids. 2,2-Dibromo-3-nitrilopropionamide (DBNPA) (CAS No. 10222-01-2) is a biocide used in drilling and fracturing fluids. In the environment, it is very toxic to a wide variety of freshwater, estuarine and marine organisms. In particular, it is lethal to "water fleas" (*Daphnia magna*) and rainbow trout at low (40 to 50 ppb) concentrations.

In order to complete the requirements of NEPA, the BLM should withdraw the EA and and issue a revised or updated RMP prior to offering these parcels for lease sale. The Draft EA fails to fully develop an adequate range of lease stipulations for the proposed action. For the reasons cited here, the BLM cannot conclude this action has 'no significant impact' and thus the EA should be withdrawn.

Recommendation 2: The updated RMP must thoroughly analyze the emerging modern technology of developing shale oil in the Niobrara Formation using horizontal drilling combined with high volume hydraulic fracturing.

The apparent primary targeted formation of these lease sales is the Niobrara Formation. The EA does not disclose the targeted formations. According to Edward O'Mara, geologist with the BLM Little Snake Field Office, the BLM staff "...have no idea what the targeted formations may include." (Personal Communication, March 10, 2011).

The 1991 BLM statewide EIS indicates that exploration drilling in the Middle Park Basin resulted in no commercial production to that date. (EIS Appendix B, page B-20). In 1991, BLM concluded then with a 95% probability level that only negligible amounts of oil and and 10 MCFG of natural gas were recoverable from the Middle Park Basin. Modern shale gas and shale oil techniques render this two-decade old conclusion no longer pertinent to today's potential to produce recoverable amounts of oil and gas from the Niobrara Formation. This has not be assessed by the BLM nor could it have been twenty years ago as the advent of this technology to the Niobrara Formation has occurred only during the last two years in Colorado.

Natural gas and oil production from 'unconventional' shale formations has been rapidly expanding during this century. Natural gas and oil in what the U.S. Geological Survey defines as 'non-conventional' formations contain natural gas within the rock matrix where the hydrocarbons were originally deposited. Such formations have not released their hydrocarbon content due to low permeability or lack of fracture release. Two technologies have

made it economically feasible to extract natural gas and oil from 'non-conventional' shale deposits: 1) horizontal drilling of multiple wells from a single pad and 2) hydraulic fracturing. Hydraulic fracturing opens new fractures in the shale increasing permeability which allows the natural gas or oil to flow to the production well.

While the 1991 EIS discusses the potential for drilling horizontally to produce hydrocarbons, it does not address the technology for recovering oil and gas using high volume hydraulic fracturing.

Unconventional-oil plays in the Western U.S. have garnered increased attention as production results have improved. A key new formation that oil and gas exploration companies are nominating to be opened for leasing by the BLM and the States of Colorado and Wyoming is the Cretaceous Niobrara Shale.

It was established prior to the 1950s that the Niobrara Shale has adequate thickness throughout, is high in total organic content, and is thermally mature. While oil has flowed from the Niobrara since initial discoveries in the Florence Field, near Canon City, Colorado, in 1876 near an oil seep, the formation is now being exploited even where the oil in the Niobrara remains in place using fracking to release the oil in horizontal wells.

Currently companies are pursuing the Niobrara Formation with increased interest including nominating these parcels in Grand County previously thought to have low potential to produce hydrocarbons. For example, EOG Resources' Jake well, a horizontally-drilled Niobrara discovery in Weld County, is in the northern Denver-Julesburg Basin. According to state records, the well flowed an average 1,750 bbl. of oil and 360,000 cu. ft. of gas per day for its first eight days on production in October 2009. The next month, it made an average of 680 bbl. per day for 30 days.

In addition to the Denver-Julesburg Basin, active exploration in the Niobrara is ongoing in the southern Powder River Basin in Wyoming, and in Colorado's North Park and South Park basins.

There are plenty of places to prospect for Niobrara, as the shale occurs across a vast, tectonically active area. It can be anywhere from 150 to 1,500 feet thick, and its total organic content (TOC) ranges up to around five percent. It contains Type II kerogen. Additionally, the Niobrara contains a high proportion of carbonates, including brittle, calcareous chalk benches. The chalk benches enhance porosity and its ability to be fractured. These factors mean that few Niobrara wells fail to produce since the high TOC persists and horizontal drilling combined with gelling agents capable of

carrying the proppant through the viscous oil have consistently proven successful.

Recommendation 3: The revised EA should be coordinated with the Colorado Oil and Gas Conservation Commission (COGCC) to determine if COGCC intends to define the area as a 'sensitive area'. Such a designation by the COGCC requires the use of certain 'green completion' technologies which involve the use of enclosed tanks to contain all drilling fluids and limits the time period when fracking fluids can be retained in any pit.

The Colorado Oil and Gas Conservation Commission (COGCC) has provisions to declare any potential development area as a 'sensitive area' determination. The proposed parcels and surrounding area may qualify for a sensitive area determination by the COGCC due to the big game habitat, recreational values and presence of sage grouse near the proposed lease parcels. When the COGCC makes a 'sensitive area determination' then certain 'green completion' drilling techniques apply. The principle component of 'green completions' is to eliminate the use of open pits and require flow-back fluids be stored in tanks with controlled valves. To define precisely when an operator must separate flow-back from natural gas product, the State of Colorado has regulatory provisions to minimize, but not preclude, the initial use of pits to contain production and fracking fluids. In Colorado, green completion practices, when required, are imposed on gas wells whenever the reservoir pressure is capable of yielding economic quantities of natural gas. This is defined as when the gas well is capable of naturally flowing hydrocarbon gas at a stabilized rate in excess of 500 thousand cubic feet per day to the surface against an induced surface back pressure of 500 pounds per square inch. (Colorado's 'green completion' definition is for natural gas wells. A modified definition would be needed to apply 'green completion' criteria for those wells that produce oil from shale.)

In Colorado, these green completion practices include the following emission reduction measures:

1. The operator must employ sand traps, surge vessels, separators, and closed top tanks as soon as practicable during flow-back and clean-out operations to maximize resource recovery and minimize releases to the environment.
2. Well effluent during flow-back and clean-out operations prior to encountering hydrocarbon gas of salable quality or significant volumes of condensate can be directed to open top tanks or pits. But if these fluids are returned to a pit, then the oil or condensate are not

allowed to accumulate in excess of ten barrels and must be removed within twenty-four hours. The gaseous phase of inflammable effluent should also be directed to a flare pit for safety purposes until flammable gas is encountered.

3. Well effluent containing more than ten barrels per day of condensate or within two hours after first encountering hydrocarbon gas of salable quality must also be directed to a combination of sand traps, separators, surge vessels, and closed top tanks or other equipment as needed to ensure that non-salable products are disposed of in a safe and environmentally responsible manner.
4. All liquids coming from the gas separators must be dumped to closed top tanks with a vapor gathering system. Flammable vapors and gas evolving from well effluent directed to closed top tanks shall be gathered and directed to a combustion device capable of 95 percent destruction efficiency.
5. Closed top tanks must utilize back pressure systems that exert a minimum of four ounces of back pressure and a maximum that does not exceed the pressure rating of the tank to facilitate gathering and combustion of tank vapors. Vent and back-pressure valves, the combustor, lines to the combustor, and knock-outs must be sized and maintained so as to safely accommodate any surges the system encounters.

Recommendation 4: The revised EA, once it has been tiered to a properly completed and updated RMP/EIS, should evaluate whether to require 'green completion' technology as a discretionary performance-based lease stipulation. BLM should expand upon this concept to include the possible use of 'green' or less toxic hydraulic fracturing fluids.

The Colorado requirements for 'green completions' should be considered by the BLM and possibly imposed as a discretionary performance standard lease stipulation. This or a similar definition of when separation of produced water is required and how long that fluid can remain in a pit should be evaluated in the upcoming RMP revision. This recommendation differs from the prior recommendation only by what government entity imposes 'green completion' technology. The author is recommending that BLM should impose green completion technologies even if the COGCC does not determine the Middle Park area to be a 'sensitive area.'

The use of less toxic, or 'green fracturing compounds' should be evaluated and possibly obligated to be used depending upon their efficacy in natural

gas recovery. Regardless of the discretionary lease stipulation imposed by the BLM, there will still be the likelihood of industrial accidents. Accidents that involve the release of chemical additives in their undiluted form pose a significant risk to the ecosystem. Industrial accidents include failure to install back flow valves, and numerous operator errors such as failure to shut off valves, improper construction of tanks and pit liners, and highway collisions involving fracking chemical transport.

Less toxic fracking fluids are being developed by the industry that remove the chlorinated hydrocarbons from the process and substitute chemicals that are water based. Less toxic fracking fluids contain guar gums and starch based chemicals that are biodegradable and do not bio-accumulate in an ecosystem. A non-toxic fluid should be free of synthetic polymers that are not biodegradable and lack the typically-used chlorinated biocides frequently used by the industry. The updated RMP should evaluate the use of less toxic fracking fluids and determine if obligating as a condition of a lease, that an operator use such fluids would not significantly impair the recovery of the natural gas or oil resource.

Production wells must be sealed from allowing any fluids to migrate up along the well annulus into a useable aquifer. In Colorado, the Oil and Gas Conservation Commission defines that the production tubing must be sealed to 50 feet below the nearest domestic well, which is intended to provide aquifer protection. A better procedure is to cement through the uppermost aquifer and approximately 50 feet into the zone below the aquifer to assure that fluids do not rise in a production well and migrate laterally along an uncemented portion of the well.

It was also noted that the soils in the area have naturally occurring salts and selenium that are flushed from the soil during runoff and from applied irrigation water. (EA, page 13.) Such conditions may also require discretionary lease stipulations to assure that selenium is not flushed from the soils and allowed to enter streams. Consideration for example of the use of wooden well pads that reduce soil disturbance would ameliorate the mobility of selenium during well pad and pit construction and use.

Recommendation 5: The BLM should require a discretionary performance-based lease stipulation to drill and operate three ground water monitoring wells near each production well or well pad; one up-gradient and two monitoring wells down-gradient in the uppermost useable aquifers.

Several states and federal agencies have or are currently considering regulations that would require ground water monitoring wells for every non-

conventional oil and gas well that uses modern hydraulic fracturing techniques.

In Colorado, regulations adopted by the Colorado Oil and Gas Conservation Commission require ground water monitoring for centralized exploration and production waste management facilities. COGCC 2CCR 404-1 Final Rule Section 908(b)(9) defines the ground water monitoring for these centralized facilities:

Ground water monitoring.

A. Water wells.

Water samples shall be collected from water wells within a 1-mile radius of the proposed facility and shall be analyzed to establish baseline water quality. Analytical parameters shall be selected based upon the proposed waste stream and shall include, at a minimum, all major cations and anions, total dissolved solids, iron and manganese, nutrients (nitrates, nitrites, selenium), benzene, toluene, ethylbenzene, xylenes, pH, and specific conductance.

B. Site-specific monitoring wells.

i. The Director shall require ground water monitoring to ensure compliance with the allowable concentrations and levels in Table 910-1 and, with consideration to WQCC standards and classifications by establishing points of compliance. All monitoring well construction must be completed in accordance with the State Engineer's regulations on well construction,

'Water Well Construction Rules' (2 CCR 402-2).

ii. *Where monitoring is required, the direction of flow, ground water gradient and quality of water shall be established by the installation of a minimum of three (3) monitor wells, including an up-gradient well and two (2) down-gradient wells that will serve as points of compliance, or other methods authorized by the Director. (emphasis added)*

The Delaware River Basin Commission (DRBC) is considering a rule that would require ground water monitoring at every production well. The DRBCC is proposing a new Article 7 of its Water Quality Regulations to protect water resources during the construction and operation of natural gas operations. In that Basin, the principle natural gas development occurs in the vast Marcellus Shale, also an 'unconventional formation' that relies upon horizontal drillings and high-volume slick water hydraulic fracturing. In Section 7.5 2(i)(A) of the draft DRBC rules ground, the ground water monitoring obligations of an operator are defined:

"Well pad project sponsors must submit ... a pre-alteration groundwater and surface water monitoring study report as part of the well pad application. The pre-alteration report must include an inventory and the mapped locations of any artificial penetrations including groundwater wells within 2,000 ft of the project well pad. The report must also include the results of groundwater sampling and laboratory analysis of a representative number of groundwater wells within 1,000 ft of the well pad. If the project sponsor or the Executive Director concludes that an insufficient number of existing wells are identified within this distance to adequately characterize the groundwater, the sampling distance must be extended up to 2,000 ft from the gas well pad. If there are no existing groundwater wells or the project sponsor is unable to gain access to any existing groundwater wells within 2,000 ft of the project well pad, *the project sponsor will be required to install a monitoring well or wells within 1,000 ft of the project well pad.*" (emphasis added)

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Weston Wilson's education, work experience, and awards.

Educational background

Bachelors of Science Degree in Geological Engineering in 1969, University of Arizona, 1969.

Masters of Science Degree in Water Resources Administration, University of Arizona, 1973.

Work Experience:

US Army Corp of Engineers – I was the second officer in the US Army to become a conscientious objector and was assigned a non-combatant function in the Republic of Vietnam. Honorably discharged in 1974.

Employed by EPA in Denver since 1974. Retired from federal civil service in January 2010. My work has included assisting Estonia, Ukraine, and the West African nation of Mali to develop their own environmental protection agencies. In this work, I have stressed the importance of scientific objectivity, lack of conflicts-of-interest, and the need for independence by a nation's environmental regulatory authority from its privately-owned and governmental industrial endeavors.

Awards from EPA and others:

1978 – EPA Bronze Medal for leading a team of experts at EPA to prepare the environmental analysis of the Northglenn, Colorado, sewage treatment system.

1990 – EPA Bronze Medal for participating in a team of experts that prepared the EPA decision to veto the building of Two Forks Dam by the Denver Water Board.

1994 – EPA Bronze Medal for leading a team of experts at EPA in analyzing the environmental risks of the proposed New World Gold Mine near Yellowstone National Park.

2002 – EPA Bronze Medal for assisting a team of experts to conduct an analysis of the impacts to streams associated with coal bed methane production in Montana and Wyoming.

2003 – Department of the Interior "Four C's Award" from Kathleen Clark, Director of the Bureau of Land Management, for analysis of the surface water quality impacts associated with coal bed methane development in Montana and Wyoming. The 'Four C's Award' is awarded to federal employees for their "consultation, cooperation, (and) communication, (for) conservation.



Bureau of Land Management
National Sage-Grouse Habitat Conservation Strategy

U.S. Department of the Interior

November 2004

**Bureau of Land Management
National Sage-Grouse Habitat Conservation Strategy**

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I. Introduction

BLM developed this National Sage-grouse Habitat Conservation Strategy (National Sage-grouse Strategy) to guide future actions for conserving sage-grouse and associated sagebrush habitats and to enhance BLM's ongoing conservation efforts. The National Sage-grouse Strategy provides a framework for future conservation efforts by setting out broad goals and specific actions to meet the goals. For each action that BLM will take, the National Sage-grouse Strategy explains what the action is, when the action will be taken and who will be the responsible official or office for completing the action. Integral to the National Sage-grouse Strategy are various guidance documents that will help BLM ensure that it successfully incorporates sage-grouse conservation measures into all of its ongoing programs and activities, including land use planning, grazing and mineral leasing, and other programs.

BLM designed this National Sage-grouse Strategy around four main goals. Associated with each goal are specific strategies and actions that BLM will undertake to meet the goal. The four goals are:

- 1) Improve the effectiveness of the management framework for addressing conservation needs of sage-grouse on lands administered by the BLM.**
- 2) Increase understanding of resource conditions in order to prioritize habitat maintenance and restoration.**
- 3) Expand partnerships, available research and information that support effective management of sage-grouse habitat.**
- 4) Ensure leadership and resources are adequate to continue ongoing conservation efforts and implement national and state-level sage-grouse habitat conservation strategies and/or plans.**

BLM is not a newcomer to sage-grouse conservation. As the land manager of almost half of the remaining sagebrush habitat, BLM plays a key role in conserving sage-grouse and sagebrush habitat. BLM has been taking actions for years on its own and as an active partner in state and local led efforts that have benefited the species and associated habitats. For example, in July 2000, BLM signed a Memorandum of Understanding (MOU) with the Western Association of Fish and Wildlife Agencies (WAFWA), the U.S. Forest Service (FS), and the U.S. Fish and Wildlife Service (FWS) that provided for state and local cooperation to coordinate planning, habitat and population mapping, and evaluation and restoration of sage-grouse populations. However, conservation of sage-grouse habitat is complex. Effective conservation strategies must occur at a variety of scales, with a variety of partners (state, local and tribal governments), and be integrated into the daily activities of the BLM land management mission. Conservation of sage-grouse requires national level policy, national and local program commitment, and local and regional knowledge and support.

Sections I through IV contain background information about sage-grouse population and life history, habitat requirements, and threats or risks potentially affecting the species. The information comes from a large body of published scientific literature, which is provided in Section IX. Sections V through VII detail the guiding principles, goals, strategies, and actions that provide the fundamental themes and guidance for preparing and implementing national and

state-level strategies. Additional information on progress reporting and a list of major authorities used by the BLM in carrying out conservation efforts are provided in Sections VIII-IX.

II. Purpose

The purpose of this comprehensive National Sage-grouse Strategy is to set goals and objectives, assemble guidance and resource materials, and provide a comprehensive management direction for the BLM's contributions to the on-going multi-state sage-grouse conservation effort in cooperation with the WAFWA.

The Federal Land Policy and Management Act (1976) (FLPMA) provides the basic authority for BLM's multiple use management of all resources on the public lands. One of the BLM's many responsibilities under FLPMA is to manage public lands for the benefit of wildlife species and the ecosystems upon which they depend. However, habitat management is one of many provisions of the multiple-use mandate outlined in FLPMA. Because conserving sagebrush habitats involves managing many other public land uses, this National Sage-grouse Strategy includes guidance and existing regulations for a variety of BLM-administered programs. FLPMA gave BLM the legal authority and mandate to manage and regulate the uses on the public lands "so that their various resource values are utilized in a combination that will best meet the present and future needs of the American people" (Section 103 (c)). Consistency and coordination in identifying and addressing threats to sage-grouse and sagebrush habitat in context of the multitude of programs that BLM manages is required. Addressing these threats throughout the range of the sage-grouse is critical to achieving the mandate of FLPMA and threat reduction, mitigation, and elimination to sage-grouse and sagebrush habitats.

In July 2000, WAFWA, FS, FWS and BLM signed an MOU that provides for Federal, state and local cooperation to coordinate planning, habitat and population mapping, and evaluation and restoration of sage-grouse populations. In July 2002, WAFWA agreed to develop a Conservation Assessment (CA) for sage-grouse and sage-grouse habitat to be completed in two distinct phases. Phase 1 is a range-wide assessment of sage-grouse populations and habitat status, trends and threats across eleven Western states. It was completed in June 2004. Phase 2, a range-wide implementation plan, will outline specific actions for the conservation of sage-grouse and sage-grouse habitats. Phase 2 is scheduled for completion in mid to late 2005.

As an active partner in Federal, state and local sage-grouse conservation planning efforts and as the primary Federal manager of sage-grouse habitat, the BLM is in a key position to contribute to sage-grouse habitat conservation from the range-wide geographic scale to the local level. This National Sage-grouse Strategy will strengthen Federal, state and local efforts by addressing habitat needs and trends on the BLM-managed lands and by ensuring that sage-grouse habitat needs are addressed in BLM land use plans and through actions carried out at the site specific level. Implementation of BLM's National Sage-grouse Strategy and the state-level Sage-grouse Habitat Conservation Strategies will complement and expand the ongoing efforts to conserve sagebrush ecosystems on public lands administered by the BLM for the benefit of sage-grouse and other wildlife species.

III. Other Sage-Grouse Related Programs, Initiatives and Efforts

BLM program actions described in this National Sage-grouse Strategy focus on achieving coordinated conservation efforts on BLM-administered public land and are consistent with and support the following on-going efforts:

- 1) **Conservation Planning Framework Team:** The 2000 MOU between BLM, FWS, FS and WAFWA established a Conservation Planning Framework Team consisting of four (4) representatives from WAFWA member agencies (U.S. only) and one (1) each from BLM, FS, and FWS. The Team is responsible for developing the range-wide conservation planning framework, making recommendations and providing guidance to working groups on the contents of state and local conservation plans.
- 2) **Nevada Ad Hoc Working Group:** In 1999, the BLM, FS, FWS, and the Nevada Department of Wildlife formed an ad hoc working group to coordinate the development of planning tools and other resources to facilitate conservation of species of concern throughout the sagebrush biome.

The working group adopted a regional, multi-scale approach to conservation and restoration in the sagebrush biome in an attempt to manage overall efforts more effectively. Prototype processes and projects of regional importance are being developed or planned for the Great Basin, Columbia Plateau, Wyoming Basin, Northern Great Plains, and the Utah/Colorado Plateau. This approach will provide better information about sage-grouse and sagebrush habitats and improve conservation planning by prioritizing areas where conservation activities are most likely to be successful using existing and projected resources.

- 3) **SageMap: Regional Science Based Assessments:** As a result of the ad-hoc working group's efforts, in 2002 the BLM, in cooperation with the FS, Pacific Northwest Research Station, and the U.S. Geological Survey (USGS), Biological Resources Division, Snake River Field Station (SRFS), developed science-based procedures that use existing information to conduct regional sagebrush habitat assessments for species of concern. The procedures are made available to the public through the USGS SageMap website and were used to develop the prototype Great Basin assessment. Information from that assessment is being used in support of sage-grouse conservation planning and the Great Basin Restoration Initiative (GBRI). These procedures are also being used to conduct or support prototype assessments in the Wyoming Basin.
- 4) **SageMap Query and Data Analysis Modeling:** The SageMap project, conducted by SRFS, is identifying and collecting spatial data layers needed to research and manage sage-grouse and shrubsteppe systems. The data sets, which can be queried, viewed, and downloaded from an FTP site, are important for understanding and managing shrubsteppe lands and associated wildlife. SageMap was created to share and disseminate information on sagebrush management, especially among resource managers and researchers interested in available literature and data from research within the sagebrush biome. SageMap contains over 3,000 data sets and currently is the most comprehensive source of spatial data related to sagebrush and associated studies in North America.
- 5) **Great Basin Restoration Initiative:** The GBRI was initiated by BLM in response to widespread habitat losses in the Great Basin from wildfires and other causes. Concern over the loss of habitats for sage-grouse and other sagebrush-dependent species was a significant and important factor in how GBRI evolved.

- 6) **Plant Conservation Alliance:** The Plant Conservation Alliance (PCA) is a public/private partnership among 10 Federal agencies and more than 200 non-Federal cooperators. In accord with Congressional direction, the PCA (through BLM) is leading an interagency native-plant material-development program for use in restoration and rehabilitation efforts on Federal lands. Funds have been provided for development of appropriate native plant materials within sagebrush ecosystems. This is critical to the development of seed sources for restoring native plant communities within sagebrush ecosystems.
- 7) **Supportive BLM Programs:** Numerous BLM programs, plans or initiatives provide additional guidance and resources to conserve and/or restore sagebrush and sage-grouse habitats as described in this National Sage-grouse Strategy. These include:
- Department of the Interior (DOI) and BLM Strategic Plans
 - 95 BLM Land Use Plans covering the current occupied range of sage-grouse
 - Healthy Forests Initiative
 - BLM Special Status Species – Manual 6840
 - BLM 1601 Handbook Appendix C – *Land Use Planning, Special Status Species*
 - National Fire Plan – 10-year implementation Plan
 - BLM Standards for Rangeland Health Handbook (H-4180-1)

IV. Overview of Sage-Grouse; Population and Life History and Threats to Sage-Grouse Habitat

Sage-grouse historically inhabited much of the sagebrush-dominated ecosystems of North America. Today, sage-grouse population abundance and extent have declined throughout most of their historical range. Population dynamics of sage-grouse are marked by strong cyclic behavior; however, in the last 30 years, the peak in the cycle of bird numbers has declined. Adult survival is high but is offset by low juvenile survival, resulting in low productivity. Habitat requirements for sage-grouse vary greatly depending on the season and life-history stage. Key habitat components include adequate canopy cover of tall grasses and medium height shrubs for nesting, abundant forbs and insects for brood rearing, and availability of herbaceous riparian species for late growing-season foraging.

No single factor can be identified as the cause of declines in sage-grouse populations. Since settlement of the West began, numerous activities have adversely affected the number of birds and the amount, distribution, and quality of sagebrush habitats. Historically, sagebrush-dominated vegetation was one of the most widespread habitats in the country. However, the majority of sagebrush ecosystems were lost or altered in some way by human activities and naturally occurring events. Some examples are large-scale conversions to cultivated croplands or pastures, altered fire frequencies resulting in conifer invasion at higher elevations and annual grass invasion at lower elevations, livestock grazing, herbicide use, mineral and energy development, and recreational activities related to urban growth and increased human populations. In many cases, the extent and significance of these effects or how sage-grouse populations will respond over time to cumulative effects caused by historical uses coupled with new activities is still unknown. Currently, the risk to sage-grouse comes from multiple sources across multiple scales. Thus, the BLM National Sage-grouse Strategy is comprehensive in its approach and address the risk to sage-grouse and habitat at appropriate scales.

A more detailed treatment of life history, threats and risks to sage-grouse is contained in the *Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats* (Connelly, et al.

2004) produced by WAFWA and available at <http://sagemap.wr.usgs.gov/>.

V. Guiding Principles

The National Sage-grouse Strategy is the framework for conserving and managing sage-grouse habitats on lands administered by the BLM. In addition, this National Sage-grouse Strategy serves as the umbrella for BLM state-level strategies, which have been or are being developed in cooperation with state wildlife agencies and partners.

The following principles are the foundation of the National Sage-grouse Strategy.

- **Cooperative Integrated Approach:** The BLM recognizes the states' role in sage-grouse conservation planning as described in the 2000 MOU. The BLM National Sage-grouse Strategy complements state-led sage-grouse conservation planning efforts and provides consistent guidance for integration of range-wide, state and local-level conservation actions into existing BLM programs. This cooperation and coordination will ensure appropriate actions are identified at the appropriate scale for conserving sage-grouse and sagebrush habitat.
- **BLM's Roles as the Key Federal Sagebrush Habitat Manager:** Approximately half of the remaining sage-grouse habitat is under BLM jurisdiction and management; therefore, BLM land plays a significant role in the conservation of sage-grouse and other sagebrush-dependent wildlife species.
- **Best Available Science:** The BLM will use the best available science and other relevant information to develop conservation efforts for sage-grouse and sagebrush habitats.
- **Comprehensive Strategy:** Planned actions carried out under this National Sage-grouse Strategy will be fully consistent with laws, regulations, and policies.
- **Interdisciplinary Integrated Approach:** The use of interdisciplinary teams and specific analysis at the local and regional levels are key to the success of sage-grouse and sagebrush conservation.
- **National Goals, Local Solutions:** This National Sage-grouse Strategy contains clearly defined goals and measurable tasks. BLM land use plans will be an essential component in implementing local solutions and sage-grouse and sagebrush conservation. These plans will use science and information at the local and state level with input from agency partners, scientists and other planning participants to develop appropriate solutions at the appropriate scale.
- **Strategic Implementation:** Development and implementation of this National Sage-grouse Strategy is consistent with, and supports implementation of the Department of the Interior (DOI) Strategic Plans Resource Protection mission under the pillars of partnerships and management.
- **Land Use Plan Based:** BLM land use plans and associated implementation plans are the principal mechanisms for making decisions and conducting on the ground actions to conserve and restore sage-grouse habitats for lands administered by the BLM. Land use plans will be updated and amended when and where appropriate, to adequately

address sage-grouse and sagebrush conservation needs through full public participation.

- **Rangeland Health Program Based:** BLM Standards for Rangeland Health are the primary tool for evaluating the condition of sage-grouse and sagebrush habitats. BLM Resource Advisory Councils (RACs) will be consulted as additional program guidelines are developed.
- **Cooperative Conservation:** Communication, cooperation, and consultation among state and Federal agencies, tribes, stakeholders, BLM RAC's within states, and the conservation community are essential for achieving successful conservation results. Partnerships both inside and outside the BLM will be fostered at every opportunity and every organizational level.
- **Supportive to Current Initiatives:** The BLM will capitalize on existing national or regional initiatives, such as the GBRI, Seeds of Success, Partnership Against Weeds, and the Plant Conservation Alliance, that benefit sage-grouse and sagebrush habitat.
- **Open Collaborative Approach:** The BLM will collaborate and share, as appropriate and authorized all information that is pertinent and useful in conserving sage-grouse and sage-grouse habitat.
- **Adaptive:** The Bureau is committed to sage-grouse and sagebrush conservation and will continue to adjust and adapt our National Sage-grouse Strategy as new information, science and monitoring results evaluate effectiveness over time.
- **Implementation Commitment:** Successful implementation of this National Sage-grouse Strategy requires a long-term commitment from BLM managers and staff across all programs and at every level of the organization.

VI. Vision, Goals, Strategies, and Actions

Vision: Manage BLM-administered public land to maintain, enhance and restore sagebrush habitats while ensuring multiple use and sustained yield goals of FLPMA.

The following table identifies the Goals, Strategies, Actions, Responsible Party, and Deadline for each Action.

Goal 1: Set forth the management framework for addressing conservation of sage-grouse on lands administered by the BLM.

Strategy 1.1: Provide needed coordinated policies and program direction at the National and the BLM State and Field Office levels.

Actions	Responsibilities	Deadline
1.1.1 Issue direction on completion of state-level strategies and BLM plans.	Director, WO-230 (Lead), WO-210 (Co-lead)	November 2004
1.1.2 Complete BLM coordination on State agency led strategies and/or plans.	State Directors	Ongoing, with final state submissions July 2005.
1.1.3 Issue off-site habitat mitigation policy. Identify limitations and opportunities for funding and implementation across programs.	WO-300 (Lead); WO-200 (Co-lead)	March 2005
1.1.4 Develop a resource guide to enhance partnership involvement in sage-grouse conservation efforts.	Director, WO-200, WO-300, WO-800	October 2004, Completed
1.1.5 Revise or develop fire management plans for each state to include sage-grouse habitat management guidance.	State Directors	October 2004
1.1.6 Report to the Director on progress towards implementation of this strategy.	WO-200 (Lead) (National Sage-grouse Strategy) State Directors (State-level strategies)	September 1, 2005, 2006, 2007

Strategy 1.2: Establish and maintain a data base to describe and track conservation efforts in sagebrush habitats.

Actions	Responsibilities	Deadline
1.2.1 Gather initial information on conservation effort from all states with current sage-grouse populations.	WO-200 (Lead), WO-300, WO-880	July 2004, Completed
1.2.2 Support the information gathered with a data base that allows assemblage across state lines and queries.	WO-200 (Lead), WO-300, WO-880, NSTC	July 2004, Completed
1.2.3 Expand the data base to include sagebrush habitat in states without current sage-grouse populations.	WO-880 (Lead), WO-200, WO-300	December 2005

Strategy 1.3: Provide guidance to ensure integration of sage-grouse habitat conservation measures for actions provided through the management in land use planning process.

Actions	Responsibilities	Deadline
1.3.1 Issue guidance to ensure land use plans and plan amendments adequately address sage-grouse habitat conservation needs.	Director, WO-200 (Lead)	October 2004, Completed
1.3.2 Develop standard terminology for sage-grouse habitats (e.g., stronghold areas, breeding, etc.) for consistent future use.	WO-200 (Lead), NSTC	January 2005
1.3.3 Complete preparation of Southeast Oregon RMP case history for applying multi-scale information.	WO-230 (Lead), DSDs, NSTC	March 2005
1.3.4 Develop a process and schedule to update deficient land use plans to address sage-grouse needs.	State Directors, WO-210	April 2005
1.3.5 Develop process for use of broad-, mid- and fine-scale assessments in land use planning efforts and incorporate into planning guidance.	WO-200 (Lead), NSTC	October 2005

Strategy 1.4: Issue mandatory guidance on management of sagebrush habitat for sage-grouse conservation.

Actions	Responsibilities	Deadline
1.4.1 Develop and issue "Guidance for the Management of Sagebrush Plant Communities for Sage-Grouse Conservation." National guidance must be adaptable to local variability provided sage-grouse conservation goals are maintained or enhanced by the local adaptations.	Director, WO-230 (lead)	October 2004, Completed
1.4.2 Develop additional management guidance as needed, to address specific future conservation needs.	WO-200 (Lead) and Fire	Ongoing
1.4.3 Develop and issue livestock grazing BMPs to restore, maintain or enhance the quality of sage-grouse and sagebrush habitat.	WO-220 (Lead), WO-200	December 2004
1.4.4 Develop and issue BMPs for oil and gas development.	WO-300 (Lead), WO-200	June 2004, Completed, WO-2004-194

Goal 2: Enhance knowledge of resource conditions and priorities in order to support habitat maintenance and restoration efforts.

Strategy 2.1: Complete and maintain eco-regional assessments of sagebrush and sage-grouse habitats across the sagebrush biome.

Actions	Responsibilities	Deadline
2.1.1 Develop national spatial data sets for multi-scale assessments.	WO-200 (Lead), WO-300, State Directors, NSTC	September 2006
2.1.2 Complete ecoregional assessments of the Wyoming Basin, Northern Great Plains, Colorado Plateau, and complete habitat connectivity analysis.	NSTC (Lead), WO-230, State Directors	September 2006 November 2006 for connectivity analysis
2.1.3 Update ecoregional assessments for the Columbia Basin and Great Basin.	WO-230 (Lead), State Directors	September 2008
2.1.4 Complete state-level mapping of sage-grouse/sagebrush habitats and disturbance regimes.	State Directors (Lead), NSTC	May 2004, Completed
2.1.5 Participate in preparation of the WAFWA range-wide sage-grouse conservation assessment phase I and phase II.	WO-230 (Lead), State Directors	June 2004, phase I completed Phase II, 2005

Strategy 2.2: Provide a consistent and scientifically based approach for collection and use of monitoring data for sagebrush habitats, sage-grouse and other components of the sagebrush community.

Actions	Responsibilities	Deadline
2.2.1 Develop, cooperatively with our partners, appropriate monitoring strategies and protocols at the appropriate scale for sage-grouse habitat in conjunction with the development of the range-wide conservation action plan.	WO-200 (Lead)	August 2005
2.2.2 Develop, cooperatively with our partners, a sage-grouse habitat assessment methodology in conjunction with development of the range-wide conservation action plan.	WO-200	November 2005

Actions	Responsibilities	Deadline
2.2.3 incorporate the sage-grouse habitat assessment framework into the land health assessment process for evaluating indicators of healthy rangelands.	WO-200	December 2006
2.2.4 in conjunction with the development of the range-wide conservation action plan, issue guidance for collecting fine-scale monitoring and assessment information and incorporating requirements into implementation projects and plans.	WO-200 (Lead), NSTC	April 2005

Strategy 2.3: Identify, prioritize and facilitate needed research to develop relevant information for sage-grouse and sagebrush habitat conservation in coordination with WAFWA.

Actions	Responsibilities	Deadline
2.3.1 in cooperation with partners, establish an national interagency, interdisciplinary technical team to: <ul style="list-style-type: none"> • receive research questions from local and regional managers and working groups; • sort priority information needs and identify sources of research information (e.g. West Nile virus); and • serve as clearinghouse for research funding proposals. 	WO-200	July 2005

Goal 3: Expand partnerships, available research, and information that support effective management of sage-grouse and sagebrush habitats.

Strategy 3.1: Maintain, develop and expand partnerships to promote cooperation and support for all activities associated with sage-grouse and sagebrush conservation.

Actions	Responsibilities	Deadline
3.1.1 Participate in the local, regional and national conservation efforts established under the agreement with Western Association of Fish and Wildlife Agencies.	State Directors; WO-200	Ongoing
3.1.2 Expand partnerships at all levels to support development and implementation of the National Sage-grouse Strategy.	Director, State Directors, Field Managers	Ongoing
3.1.3 Maintain and expand state and local partnerships to implement the tasks outlined in the cooperatively developed state-level strategies and/or plans.	State Directors, Field Managers	Ongoing

Strategy 3.2: Effectively communicate throughout BLM and with current and prospective partners on steps BLM will take to conserve sage-grouse and sagebrush habitats.

Actions	Responsibilities	Deadline
3.2.1 Complete a communications plan for the National Sage-grouse Strategy, including internal and external audiences.	WO-610 (Lead), WO-200, WO-300, WO-880	August 2004, Completed and Ongoing
3.2.2 Complete a communications plan for state-level sage-grouse strategies/plans, including internal and external audiences. Ensure that the BLM National, State and Field Office communication strategies support the comprehensive National Sage-grouse Strategy and ensure each level of the BLM organization knows how their strategies implement goals and enhance sage-grouse and sagebrush conservation goals.	State Directors (Lead), Public Affairs, Field Managers	December 2004

Strategy 3.3: Facilitate the collection, transfer and sharing of information among all BLM partners and cooperators, as well as BLM program personnel.

Actions	Responsibilities	Deadline
3.3.1 Continuously improve interagency data and mapping efforts such as SageMap	WO-200 (lead)	Ongoing
3.3.2 Improve web-based tools available to support sagebrush conservation efforts (e.g. links to literature, project and studies maps, decision support models)	WO-200 (lead)	2005; Ongoing
3.3.3 Develop and distribute publications that support field-level conservation efforts	WO-200 (lead)	Ongoing; 2005 and beyond
3.3.4 Develop minimum standards for data collection, data dictionary and reporting at state, regional and national levels that are compatible with data developed by state agencies and other partners	WO-200 (Lead), WO-880	December 2006
3.3.5 Provide training to ensure Bureau-wide understanding of sage-grouse habitat requirements and Best Management Practices (BMPs) across all disciplines	WO-230 (Lead), NTC	December 2005
3.3.6 Host a biennial workshop with partners to share understanding and knowledge of sagebrush ecology and management, including use of BMPs	WO-200	Biennial
3.3.7 Identify cooperative funding and/or other mechanisms for data collection, reporting and dissemination related to sagebrush and sage-grouse habitats	WO-200	November 2004
3.3.8 Enhance and accelerate, through partnerships, technical and scientific support to the field for sagebrush conservation efforts	WO-200/WO-170	June 2005

Goal 4: Ensure leadership and resources are adequate to implement national and state-level sage-grouse and sagebrush habitat conservation strategies and/or plans.

Strategy 4.1: Develop BLM state-level strategies and/or plans for sage-grouse and sagebrush conservation on BLM-administered public lands.

Actions	Responsibilities	Deadline
4.1.1 Establish BLM state-level interdisciplinary teams to prepare strategies.	State Directors (Lead), Field Managers	Ongoing; November 2004
4.1.2 Consult with States, RACs, Councils, tribes, other agencies, stakeholders, and interested publics in preparation of draft BLM state-level strategy/plan.	State Directors (Lead), Field Managers	Ongoing; annual meetings
4.1.3 Incorporate sage-grouse/sagebrush conservation measures into all applicable land use plans.	State Directors (Lead), Field Managers	Ongoing, as scheduled per Action 1.3.4

Strategy 4.2: Formulate budgets necessary to support continued implementation of the National Sage-grouse Strategy.

Actions	Responsibilities	Deadline
4.2.1 Prioritize needs for sage-grouse and sagebrush conservation in Strategic Budget Plan (FY+2).	Director, State Directors, Field Committee and the Budget Strategy Team	Ongoing; annual
4.2.2 Include priority needs for sage-grouse and sagebrush conservation in Budget Justifications (FY+1).	State Directors, Field Managers, WO-200, WO-300, WO-800 (Lead)	Ongoing; annual
4.2.3 Prioritize needs for sage-grouse and sagebrush conservation in Annual Work Plan.	State Directors, Field Managers, WO-200, WO-300, WO-800 (Lead)	Ongoing; annual
4.2.4 Give priority to sage-grouse and sagebrush conservation in CCS, CCI and NFWF funding proposals.	State Directors, Field Managers, WO-200	Ongoing; annual

VII. Progress Reporting

Implementation of the actions outlined in this BLM National Sage-grouse Strategy and the cooperative state agency led sage-grouse habitat conservation strategies will be monitored and progress reported to the Director annually. The effectiveness of implementing actions outlined in both the national and state strategies will require an assessment process that includes 'before and after' project evaluation of habitat conditions. This assessment process is currently being developed (see Action 2.2.2). The assessment process will be incorporated into BLM's land health assessment process for evaluating indicators of healthy rangelands.

VIII. Authorities and Responsibilities

The BLM has broad authority to manage the public lands. BLM management of the public lands is guided by Federal laws, regulations, policies and handbooks. Collectively, these frame BLM's "regulatory mechanisms" for sage-grouse conservation as discussed in Section 4 of the Endangered Species Act. Many of these authorities have a bearing on sage-grouse conservation, but only the most relevant ones are discussed below.

1) Laws

Several major Federal laws provide the authority and framework for this National Sage-grouse Strategy:

Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 *et seq.*), as amended

This is the primary Federal law governing most land uses on BLM-administered lands. It directs BLM to develop and maintain land use plans based on inventories of these lands and the resources they support. Among other things, this Act gave fish and wildlife resources equal standing with the other traditional public uses of BLM-administered lands. Section 102(a)(8) states: "The Congress declares that it is the policy of the United States that the public lands be managed in a manner that will....provide food and habitat for fish and wildlife...."

National Environmental Policy Act (NEPA), 1969, Title II (42 U.S.C. 4321 *et seq.*), as amended

NEPA requires that land-management planning be conducted in the public arena, using an interdisciplinary process for evaluating and disclosing resource information that considers physical, cultural, and biological resources in conjunction with social and economic factors to explore alternatives; consider impacts, including cumulative impacts; mitigate impacts; and decide appropriate public land uses.

Public Rangelands Improvement Act 1978, Title II (43 U.S.C. 1901 *et seq.*), as amended

The Public Rangelands Improvement Act provides that "[e]xcept where the land use planning process required pursuant to Section 202 of [FLPMA] determines otherwise or the Secretary determines, and sets forth his reasons for this determination, that grazing uses should be discontinued (either temporarily or permanently) on certain lands, the

goal of ...management shall be to improve the range conditions of the public rangelands so that they become as productive as feasible in accordance with the rangeland management objectives established through the land use planning process, and consistent with the values and objectives listed in sections 2(a) and (b)(2) of this Act."

Sikes Act of 1974, Title II (16 U.S.C. 670 et seq.), as amended

This Act directs the Secretaries of Interior and Agriculture to, in cooperation with the State agencies, develop plans to "... develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game. Such conservation and rehabilitation programs shall include, but not be limited to, specific habitat improvement projects, and related activities and adequate protection for species considered threatened or endangered."

Wild Horse and Burro Act of 1971 (16 U.S.C. 1331), as amended

The Wild Horse and Burro Act gives BLM statutory authority for management of wild horses and burros and responsibility to provide for a thriving ecological balance on public rangelands. At 43 CFR 4700.0-6 is the policy of the BLM that: "Wild horses and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat."

2) Regulations

Once a law is enacted, the administering Federal agency promulgates rules and regulations, as appropriate, to guide implementation. These regulations set the framework for national policy and can in some instances provide implementation direction. Regulations are a very important "regulatory mechanism" for administering land uses on public lands. For the BLM, there are several sets of regulations associated with implementing FLPMA and other laws. Most of the regulations that may affect BLM guidance on sage-grouse management are found in 43 CFR, although some, such as the Council on Environmental Quality regulations, are found in other portions of the CFR.

43 CFR Subpart C, Minerals Management 3000 Series,

The Minerals Management regulations contain regulatory authority for BLM operations, enforcement and reclamation of mineral actions on public lands.

43 CFR Subpart 4120, Grazing Management

The Grazing Management regulations contain the regulatory authority for grazing administration, use authorizations, permit terms, and conditions for achieving resource-condition objectives. Subparts 4140-4170 outline prohibited acts, enforcement, and penalties. Subpart 4180 is an example of how regulations provide direction for sage-grouse conservation. Within the scope of these grazing regulations, are included specific direction to the BLM State Directors to develop standards that among other things would address:

(43 CFR 4180.2(d)):

(4) Habitat for endangered, threatened, proposed, candidate, or special status species; and (5) Habitat quality for native plant and animal populations and communities.

In addition, Subpart 4180.2(e) requires development of guidelines to address:

(9) Restoring, maintaining or enhancing habitats of Federal proposed, Federal candidate, and other special status species to promote their conservation.

43 CFR 4180, Fundamentals of Rangeland Health

The Fundamentals of Rangeland Health require the BLM to develop, in consultation with Resource Advisory Councils, rangeland health standards. The Fundamentals of Rangeland Health combine the basic precepts of physical function and biological health with elements of law relating to water quality and plant and animal populations and communities to provide the basis for the standards for land health.

3) BLM National Policy Guidance

National policy guidance further defines or clarifies how laws and regulations will be administered. This direction comes either in the form of a policy statement or as manuals or handbooks. National policy establishes what basic policy is to be achieved. BLM State and local policies can provide more specific guidance on how the national policy objectives are to be accomplished. BLM State and local field offices have discretion to adapt national policy to local situations, but do not have authority to override national policy for local situations.

Policies are particularly useful in avoiding conflicts with laws and regulations. Federal agency policies concerning sensitive species are a good example. The ESA only applies to proposed and listed species and designated or proposed critical habitat, but it is in the interest of the Federal government, consistent with other laws such as FLPMA, to conserve sensitive species with the intent to avoid a need to list. There are no regulations associated with FLPMA that specifically address fish and wildlife management or, more specifically, conservation of sensitive species at risk of being listed in the future. Agency policy provides this direction for sensitive species conservation and fills this regulatory gap. Two main sets of policy guidance currently provide direction for sage-grouse conservation efforts.

BLM Special Status Species Management – Manual 6840

Policy guidance for sage-grouse habitat conservation is summarized in this manual. It provides national-level policy direction, consistent with appropriate laws, for the conservation of special-status species of animals and plants and the ecosystems on which they depend. *Conservation* in this National Sage-grouse Strategy, and consistent with 6840 policy, means the use of all methods and procedures necessary to improve the condition of special status species and their habitats to a point where their special status recognition is no longer warranted.

Land Use Planning Handbook - H-1601-1

All program actions (allocations, authorizations, objectives, standards, conditions and implementation priorities) taken on the public land are guided by land use plans. These plans ensure that the public lands are managed in accordance with the intent of Congress as stated in FLPMA (43 U.S.C. 1701 *et seq.*) under the principles of multiple use and sustained yield. The BLM Land Use Planning Handbook provides more detailed direction for land use planning consistent with planning regulations found in 43 CFR 1600.

The Handbook states that, as required by FLPMA, the public lands must be managed in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use by encouraging collaboration and public participation throughout the planning process. In addition, the public lands must be managed in a manner that recognizes the nation's need for domestic sources of minerals, food, timber, and fiber from the public lands.

Land use plans are the primary mechanisms for guiding BLM program activities. Land use plans guide management actions on public lands in the planning area. Land use plan decisions establish goals and objectives for resource management,; measures needed to achieve these desired future conditions, and the parameters for using BLM-administered public land. These plans identify lands that are open or available for certain uses, including any applicable restrictions, and lands that are closed to certain uses.

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Re: DOI-BLM-LLCON2000 -2011-0016-BA

Dear Bureau of Land Management:

Environmental Assessment Comments on Lease Sale Parcels 5903, 5904, 5907, 5938, 5937, 5936, 5934, 5935

Introduction

Grand County has great concerns in regards to the upcoming leases of eight parcels totaling 12,412 acres of land in Grand County for Oil and Gas exploration. The local ecosystem is very fragile and much care is taken to protect it in order to preserve the County's natural beauty. The County feels that the impending exploration of Oil and Gas could have drastic negative consequences on our local environment and infrastructure.

Water Resources and Water Quality

Two of the most serious issues in Grand County are water resources and water quality. Grand County is a unique and sensitive area due to being the headwaters for the Colorado River. Several tributaries to the Colorado River run through the proposed lease parcels, including Deer Creek, Pass Creek, Red Dirt Creek, Dunning Creek, Pinto Creek, the East Fork of the Troublesome Creek, Round Gulch and several un-named water courses. Water quality in all of these creeks and water courses is of serious concern, as they provide irrigation water to several area ranches, and they are critical to the ranching and fishing economy in Grand County.

Grand County has a growing concern regarding availability of water to support the current population and tourism sector. Adding large industry, such as Oil and Gas, would put even further strain on this valuable resource. Water resources such as the Colorado River and many local lakes are also major tourist and recreation attractions. The heavy water needs inherent to Oil and Gas exploration would put a strain on these water bodies, thus endangering the features of these attractions.

Resource Management Plan

The Kremmling BLM Field Office is currently working on revising their Resource Management Plan (RMP), which was originally developed in 1984, to insure that our ecosystem and wildlife are not adversely impacted. More time is needed in order to have this outdated document finalized before a determination can safely be made in regards to the impact that the exploration of Oil and Gas will have on the local environment.

Grand County continues to believe that the BLM should defer parcels that are covered by RMPs that are ongoing amendment or revision. National Environmental Policy Act (NEPA) provides that, during preparation of an environmental impact statement (EIS), such as that accompanying the amendment or revision of a resource management plan, the BLM cannot take actions that will limit the choice of alternatives. 43 C.F.R. § 1506.1 (Limitations on actions during NEPA process). By approving oil and gas leasing while considering their impacts on other resources, including alternatives to protect those resources from the potential damage caused by oil and gas development, the BLM will foreclose the selection of alternatives, including important mitigation measures. Such action undermines the efforts of both the agency and the public in participating in the lengthy planning process for amendment or revision of a resource management plan.

In granting the protest of the February 8, 2007, lease sale by a number of conservation groups as it pertained to parcels within the White River Field Office, the BLM stated:

BLM is currently developing management alternatives to amend the 1997 White River Resource Management Plan (RMP) to address proposed oil and gas development activity within the planning area. The management alternatives will analyze impacts to wildlife, including sage-grouse. The White River field Office has decided to defer these parcels from the lease sale during the RMP Amendment process. (emphasis added).

As confirmed by this decision, there are potential impacts to other resources, including wildlife (and specifically sage grouse), from oil and gas development. An ongoing RMP Amendment, such as that which occurred in the White River Field Office, is an important opportunity to consider new information on impacts and ways to protect other resources. Similarly, revisions of RMPs, such as those occurring in the Kremmling Field Offices, which reassess all decisions in the existing plan, consider impacts from oil and gas development and management alternatives, including mitigation measures, to protect them.

During this environmental analysis, BLM should consider the importance of protection of plants, wildlife and wilderness characteristics. With respect to sage grouse, as well as other wildlife, such as mule deer, moose and elk, strong consideration should be given to the current condition of habitat and the impacts of oil and gas drilling on the habitat. Other wildlife concerns include sage grouse winter habitat and potential habitat for threatened or endangered plant or animal species. Previous protest letters from Grand County have outlined concerns regarding raptor nesting and fledgling habitat, sage grouse nesting, and wetland vegetation areas, in addition to potential habitat for threatened or endangered plant or animal species.

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County Regulations

Grand County feels that it is important that our regulations address the potential impacts that Oil and Gas exploration would have on our infrastructure. Unfortunately, our current regulations do not specifically address many of these impending issues. Oil and Gas exploration requires an increased volume of large vehicles to travel our local highway and county road system. An impact fee structure will be needed to fund the increased traffic on our road system. We are asking that the proposed leases be delayed in order for the county to amend current regulations in preparation for this industrial application.

Conclusion

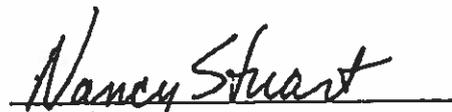
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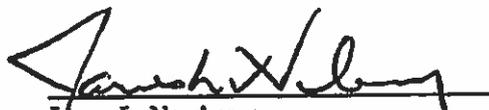
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Sincerely,


Gary Duingarner, Chairman
Grand County Commissioner, District 3


Nancy Stuart
Grand County Commissioner, District 2


James L. Newberry
Grand County Commissioner, District 1

cc: Board of Trustees, Town of Kremmling
Board of Trustees, Town of Granby
Board of Trustees, Town of Grand Lake
Board of Trustees, Town of Hot Sulphur Springs
Board of Trustees, Town of Fraser
Board of Trustees, Town of Winter Park



- (viii) Additional Best Management Practices (BMP) shall be incorporated if the water quality is affected in any negative manner. These shall include but are not limited to:
- (ix) An Integrated Pest Management (IPM) system that will minimize pest problems shall be approved by Grand County. This IPM will include:
 - (1) Reliable and accurate pest identification.
 - (2) Monitoring pest populations and related damage to ensure treatments will only be applied when necessary and when they will be most effective.
 - (3) Establishment of injury levels that can be tolerated before controls are implemented.
 - (4) Use of combinations of the following treatment methods to control pests in a manner that achieves a high level of effectiveness while minimizing environmental impact:
 - (5) Biological controls - release of predatory/parasitic insects
 - (6) Cultural controls - use of resistant cultivars, encouragement of diverse plant communities, and using optimal irrigation management and other techniques to maximize plant vigor.
 - (7) Physical Controls - sanitation, pruning, protective weed barriers.
 - (8) Chemical Controls - use of products that are target specific, have short lived residual lives and have low environmental impacts.
- (x) Continuous evaluation of turf management practices and pest treatment effectiveness to determine if changes are necessary.
- (e) No disturbance or construction may occur on the proposed golf course site unless approved by the Grand County Board of Commissioners.

➔ (15) **Oil and gas exploration and production**

This section shall apply to all oil and gas operations within the unincorporated area of Grand County with the exception of those lands where the County's jurisdiction is preempted by federal or state law. In recognition of the need to avoid operational conflicts, yet recognizing the rights of surface owners, the right of the County to determine land uses and the right of the mineral estate to extract minerals, the following additional submittal requirements, review standards and criteria for approval shall apply.

- (a) **Submittal Requirements**
The Applicant shall submit the following:
 - (i) Copies of application forms for all applicable local, state, or federal permits, including Colorado Oil and Gas Conservation Commission (CCOGCC) forms;
 - (ii) Evidence of surface owner notification, of mineral lease agreements and of surface agreements where the surface owner is not a party to the mineral lease;

- (iii) A detailed drawing of the site at a scale of 1 inch to 100 feet, including the dimensions of the site, indicating area in square feet and acres, and the area of the site to be disturbed;
 - (iv) The location of all structures, flow lines or pipelines, tanks, wells pits, and any other oil and gas operation facilities or equipment;
 - (v) Existing and proposed roads within the site as well as ingress and egress from public or private road;
 - (vi) Lease lines, if applicable;
 - (vii) On-site features such as floodplain designations, water courses, drainage, utility lines and easements, ditches, wetlands or aquatic habitat, significant plant ecosystems, wildlife habitat and migration routes, geologic features, vegetative cover, dams, reservoirs, mines, and known cultural resources;
 - (viii) Existing and proposed topography of the site at intervals of five feet, existing and proposed vegetation, buffers, berms, fences, and other screening devices;
 - (ix) Vicinity map, drawn to scale, including: section, township, and range of the site, surrounding public roads and municipal boundaries, adjacent properties and the approximate location of building and their uses within a distance of 1000 feet of any proposed structure, facility, or area to be disturbed;
 - (x) Copies of financial guarantees in the form of bonds, letters of credit, cash, certificates of deposit, or other guarantees acceptable to the County, if the Board of County Commissioners determines that financial guarantees are necessary to assure the performance of specific conditions of approval of the development plan. This requirement may be waived by the Board of County Commissioners if the Board is satisfied that individual bonds posted with the COGCC for the proposed operation cover the conditions of the development plan approval granted under this Article, or if the operator posts a blanket bond with the County covering all operations conducted in County in an amount of \$500,000 or more;
 - (xi) An operation plan including the method of and schedule for the drilling completion, production, abandonment and reclamation phases of the operation.
- (b) **Liability Insurance**
 For any facility permitted under this article, the applicant shall submit a certificate of insurance to the Grand County Department of Planning and Zoning, showing that a policy of comprehensive general liability insurance or a self-insurance program approved by the Colorado Insurance Commission, in the amount of no less than \$400,000.00 per occurrence, insuring the applicant against all claims or causes of action made against the applicant for damages arising out of the drilling, maintenance, operation or other work done with respect to such proposed facilities. The policy shall be written by a company authorized to do business in the State of Colorado, unless the applicant is self-insured. The certificate shall require at least 30 days' notice to the County prior to termination of coverage for any reason. If the insurance policy lapses or becomes void for any reason whatsoever, the approval shall cease to be valid until a new insurance certificate is provided and filed with planning. All approved oil or gas or related activity shall cease, consistent with safety considerations, until the applicant provides evidence that insurance coverage in the prescribed amount is in effect.

- (c) **Performance Security**
The applicant shall provide one form of the following security to ensure compliance with mitigation requirements set forth in this article and specific conditions of approval for facilities: \$5,000.00 performance bond for each facility; \$50,000.00 countywide blanket bond for all facilities operated by the applicant within the county; irrevocable letter of credit; or equivalent financial security acceptable to the county. Conditions of approval covered by this performance security shall consist of mitigation measures addressing specific impacts affecting the general public and/or adjacent landowners by the applicable performance standards contained in these Regulations. Reclamation activities which fall under Colorado Oil and Gas Conservation Commission jurisdiction are exempted from this performance security coverage.
- (d) **Location of Oil and Gas Wells**
- (i) The siting of a facility shall adhere to the standards outlined in the Grand County Zoning Regulations to the maximum extent practical and shall lie within the Colorado Oil & Gas Conservation Commission (CCOGCC) determined drilling window, or in a location that complies with CCOGCC rules and regulations;
 - (ii) No facility shall be sited in a geologic hazard area; an area with slopes exceeding 30 percent; an area of wetlands under the jurisdiction of the U.S. Army Corps of Engineers; an area within a floodway of a stream or river as determined by a state licensed professional engineer;
 - (iii) Wells and any associated oil and gas operation facility or structure requiring a building permit shall not be located in subdivisions containing lots of ten acres or less;
 - (iv) At the request of either the operator, surface owner, or any other landowner, County Planning staff will conduct a public site visit with all interested parties to evaluate locations, compliance with County Regulations and mitigation that may be required. When possible this site visit will be coordinated with site visits required by CCOGCC rules;
 - (v) If the CCOGCC spacing rules require a well to be located contrary to the siting required by these Regulations, the applicant shall apply for a variance with the CCOGCC to meet the County's well location requirements. If such a variance is not granted, the location as required by these Regulations shall be complied with to the maximum extent possible. The Board of County Commissioners may impose additional mitigation measures as necessary to protect the public health, safety, and welfare when the well is not located as required by these regulations;
 - (vi) No oil and gas operation shall violate the setbacks of the applicable zoning district in which the operation is located. In order to buffer oil and gas operations from surrounding properties, wells and any associated oil and gas operation facility or structure requiring a building permit shall meet the following setbacks:
 - (1) A minimum of five hundred feet (500') from the site perimeter of the facility to any occupied building or occupied building permitted for construction, unless verified written consent is obtained from the affected property owner;
 - (2) A minimum of three hundred feet (300') from the site perimeter of the facility to the closest platted subdivision lot line, unless verified written consent is obtained from the affected property owner; and;
 - (3) A minimum of two hundred feet (200') from the site perimeter of the facility to any public right-of-way;

- (4) A smaller set back may be granted if the surface owner agrees and if there is no adverse impact on adjacent properties created by the reduced setback;
- (vii) If the CCOGCC spacing rules require location of wells at a distance less than these minimum requirements, the applicant shall apply for a variance with the CCOGCC to meet the County's setback requirements. If such a variance is not granted, the setbacks specified in these regulations shall be complied with to the maximum extent possible. The Board of County Commissioners may impose additional mitigation measures as necessary to protect the public health, safety, and welfare where these setbacks cannot be met.
- (e) **A maximum of one oil/or gas well is allowed per 40 acres.**
- (f) **Review Standards and Criteria for Approval**
A permit for oil and gas operations shall be approved, conditionally approved or denied in accordance with the standards set forth in Section XI and the following standards and criteria:
 - (i) **Noise**
 - (1) Any equipment used in drilling, completion, or production of a well must comply with the maximum permissible noise levels set forth in CCOGCC Regulation 802.
 - (2) Where a facility does not comply with the required setback or other portions of the performance standards, additional noise mitigation may be required. In determining noise mitigation, specific site characteristics shall be considered, including but not limited to, Nature and proximity of adjacent development; Prevailing weather patterns, including wind directions; Vegetative cover on or adjacent to the site; Topography.
 - (3) One or more of the following additional noise abatement measures, listed below:
 - (a) Acoustically insulated housing or covers enclosing any motor or engine;
 - (b) Screening of the site or noise emitting equipment by fence or landscaping;
 - (c) Solid wall or fence of acoustically insulating material surrounding all or part of the facility.
 - (d) A noise management plan specifying the hours of maximum noise and the type, frequency, and level of noise to be emitted; and
 - (e) Any other noise mitigation measures required by the CCOGCC.
 - (f) Construction of buildings or other enclosures may be required where facilities create noise and visual impacts non-mitigatable because of proximity, density and/or intensity of adjacent land use.
 - (ii) **Visual Mitigation in Visually Sensitive Areas**
 - a. Well sites located within a visually sensitive area shall be mitigated according to the provisions of this section. Visually sensitive areas shall be defined as any area within 1000 feet of a residence, school, health care facility, or place of public assembly, 500 feet from a public road, and 500 feet from a property line. Any facility within a visually sensitive area shall utilize the following mitigation measures:

Visual Mitigation Measures

Landscaping	Equipment and Size
<p>Landscaping Requirements: -Five (5) foot berm with no greater than a 3:1 slope ratio; -Min. 15% of total developed area; -Placed on perimeter of site; -One specimen tree per 200 s.f. of landscaped area; -Min. 50% of trees must be evergreen; -One 5-gal. shrub per 100 s.f. of landscaped area; -Landscape plan by certified landscape architect or arborist and include species suitable for climate and soils type; -Landscaping may be placed on adjacent property. -Irrigation plan required for first 2 years after establishment of vegetation -Financial guarantee provided to County in amount equal to value of landscaping.</p>	<p>Reclaim drilling pad up to the drilling anchors.</p> <p>Production equipment will be no greater than 10 feet tall (i.e. horizontal separator/dehydrator and low profile pumps*.)</p> <p>There will be no motorized production equipment on the site or production equipment will use electric motors instead of gas-reciprocating engines.</p>

- (iii) **Air Quality**
 Air contaminant emissions shall be in compliance with the permit and control provisions of the Colorado Air Quality Control Program, Title 25, Article 7, C.R.S.

- (iv) **Water**
 - (a) An approved well permit shall comply with the following requirements:
 - (1) All CCOGCC water well testing and water-bearing formation protection procedures and requirements.
 - (2) All applicable state water quality standards and classifications established by the Water Quality Control Commission.
 - (3) Water Right Determination and Administration Act and the Ground Water Management Act for beneficial uses of produced water related to coal bed methane production.
 - (4) All Bradenhead and water well testing data shall be forwarded to the Grand County Department of Planning and Zoning.

- (v) **Hydraulic Fracturing**
 The permit holder shall provide a list of all chemicals used in Hydraulic Fracturing operation to the Grand County Department of Planning and Zoning for review and approval.

- (vi) **Inspections**
 Any site under an approved development plan may be inspected by the County at any time, to ensure compliance with the requirements of the approved development plan, provided that one hour's prior notice is given to the contact person at the telephone number supplied by the applicant. Calling the number (or leaving a message on an available answering machine or voice mail service at the number) at least one hour in advance of the proposed inspection shall constitute sufficient prior notice if the contact person does not answer. By accepting an approved development plan, the applicant grants its consent to such inspections.

- (vii) **Operational Conflict**
 Special exceptions to these regulations may be granted where the requirements of these regulations actually conflict in operation with the requirements of the Colorado Oil and Gas Conservation Act or implementing regulations. All

applications where a special exception due to operational conflicts is requested shall be heard in a noticed public hearing by the Board of County Commissioners acting in a quasi-judicial capacity. The applicant shall have the burden of pleading and proving an actual, material, irreconcilable operational conflict between the requirements of these regulations and those of the COGCC in the context of a specific application.

For the purpose of this section, an operational conflict exists where the County condition of approval or regulation actually conflicts in operation with the state statutory or regulatory scheme, and such conflict would materially impede or destroy the state's interest in the development, production, and utilization of oil and gas resources in the state, and the protection of the public health, safety and welfare. An operational conflict may occur where the County regulation prohibits an activity which the COGCC, or its valid regulations, has clearly authorized, or where the County regulation authorizes an activity which the COGCC, or its valid regulations, has clearly prohibited.

Additional County requirements in areas regulated by the COGCC, which also falls within County land use powers and which are necessary to protect the public health, safety and welfare under the facts of the specific application presented, and which do not impose unreasonable burdens on the applicant, shall be presumed not to present an operational conflict. If the Board of County Commissioners finds, based upon competent evidence in the record, that compliance with the requirements of this section shall result in an operational conflict with the state statutory and regulatory scheme, a special exception may be granted, in whole or in part, but only to that extent. The Board of County Commissioners may condition the approval of a special exception as necessary to protect the public health, safety and welfare by mitigating any adverse impacts arising from the grant of approval

- (16) **ADULT ORIENTED USES shall be subject to the following additional provisions:**
- (a) No person may operate or cause to be operated an adult oriented use within 1,000 feet of any of the following uses or property boundaries, whether the use or zone district listed below is unincorporated Grand County, an adjacent county, or within an incorporated Town:
 - (i) Any church, school, child care or day care facility, public park, playground, outdoor recreational area or recreation facility, public facility or library.
 - (ii) Any single family or multi-family dwelling or any boundary of any R-Residential, E-Estate or M-Mobile Home Zone Districts.
 - (iii) Any establishment holding a liquor license.
 - (iv) Of another adult oriented uses.
 - (b) For purposes of this section, the distance between any adult oriented use and any use or zone district boundary outlined in Section 16(a) above, shall be measured in a straight line, without regard to intervening structures or objects or political boundaries, from the closest property line of any adult oriented use to the nearest property line of any use or zone district boundary outlined in Section 16(a) above. No person may operate or cause to be operated an adult oriented use within 1,000 feet of another adult oriented use.
 - (c) No person may cause or permit the operation, establishment or maintenance of more than one adult oriented use within the same building or structure or portion thereof, such as in a shopping center. An adult oriented use may include one or more types of adult oriented use provided it has one address and is operated as a single use entity that has one sales tax license number.

**APPENDIX C
GRAND CO. LETTER AND
ORDINANCE**



BOARD OF COMMISSIONERS

JAMES L. NEWBERRY
District I, Winter Park 80482
L. NANCY STUART
District II, Granby 80446
GARY BUMGARNER
District III, Kremmling, 80459

E-Mail: Grandety1@co.grand.co.us
PHONE: 970/725-3347
Fax: 970/725-0565
LURLINE UNDERBRINK CURRAN
County Manager
ANTHONY J. DICOLA
County Attorney

February 1, 2011

Mr. David Stout
Field Manager
Bureau of Land Management
Kremmling Field Office
P.O. Box 68
Kremmling, Colorado 80459-0068

Re: DOI-BLM-LLCON2000 -2011-0016-EA

Dear Bureau of Land Management:

Environmental Assessment Comments on Lease Sale Parcels 5903, 5904, 5907, 5938, 5937, 5936, 5934, 5935

Introduction

Grand County has great concerns in regards to the upcoming leases of eight parcels totaling 12,412 acres of land in Grand County for Oil and Gas exploration. The local ecosystem is very fragile and much care is taken to protect it in order to preserve the County's natural beauty. The County feels that the impending exploration of Oil and Gas could have drastic negative consequences on our local environment and infrastructure.

Water Resources and Water Quality

Two of the most serious issues in Grand County are water resources and water quality. Grand County is a unique and sensitive area due to being the headwaters for the Colorado River. Several tributaries to the Colorado River run through the proposed lease parcels, including Deer Creek, Pass Creek, Red Dirt Creek, Dunning Creek, Pinto Creek, the East Fork of the Troublesome Creek, Round Gulch and several un-named water courses. Water quality in all of these creeks and water courses is of serious concern, as they provide irrigation water to several area ranches, and they are critical to the ranching and fishing economy in Grand County.

Grand County has a growing concern regarding availability of water to support the current population and tourism sector. Adding large industry, such as Oil and Gas, would put even further strain on this valuable resource. Water resources such as the Colorado River and many local lakes are also major tourist and recreation attractions. The heavy water needs adherent to Oil and Gas exploration would put a strain on these water bodies, thus endangering the features of these attractions.

Resource Management Plan

The Kremmling BLM Field Office is currently working on revising their Resource Management Plan (RMP), which was originally developed in 1984, to insure that our ecosystem and wildlife are not adversely impacted. More time is needed in order to have this outdated document finalized before a determination can safely be made in regards to the impact that the exploration of Oil and Gas will have on the local environment.

Grand County continues to believe that the BLM should defer parcels that are covered by RMPs that are ongoing amendment or revision. National Environmental Policy Act (NEPA) provides that, during preparation of an environmental impact statement (EIS), such as that accompanying the amendment or revision of a resource management plan, the BLM cannot take actions that will limit the choice of alternatives. 43 C.F.R. § 1506.1 (Limitations on actions during NEPA process). By approving oil and gas leasing while considering their impacts on other resources, including alternatives to protect those resources from the potential damage caused by oil and gas development, the BLM will foreclose the selection of alternatives, including important mitigation measures. Such action undermines the efforts of both the agency and the public in participating in the lengthy planning process for amendment or revision of a resource management plan.

In granting the protest of the February 8, 2007, lease sale by a number of conservation groups as it pertained to parcels within the White River Field Office, the BLM stated:

BLM is currently developing management alternatives to amend the 1997 White River Resource Management Plan (RMP) to address proposed oil and gas development activity within the planning area. The management alternatives will analyze impacts to wildlife, including sage-grouse. The White River field Office has decided to defer these parcels from the lease sale during the RMP Amendment process. (emphasis added).

As confirmed by this decision, there are potential impacts to other resources, including wildlife (and specifically sage grouse), from oil and gas development. An ongoing RMP Amendment, such as that which occurred in the White River Field Office, is an important opportunity to consider new information on impacts and ways to protect other resources. Similarly, revisions of RMPs, such as those occurring in the Kremmling Field Offices, which reassess all decisions in the existing plan, consider impacts from oil and gas development and management alternatives, including mitigation measures, to protect them.

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Based on the new information now available to the BLM, the NEPA analysis in the current RMPs cannot support leasing parcels under conservation easements or parcels with wilderness characteristics or habitat for sage grouse, mule deer, moose, elk. The ongoing amendment and revision process for the Kremmling RMP provides the appropriate opportunity for a thorough analysis of new information and consideration of alternatives to protect these important natural resources. Grand County was of the understanding that no Oil and Gas exploration leases would be considered until such time as the RMP has been adopted.

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Parcel 5873 is also under a Conservation Easement with the State of Colorado acting by and through the Department of Natural Resources for the use and benefit of the Division of Wildlife and Wildlife Commission. Under Section 7, the following is prohibited: "mining drilling or exploring for or extracting minerals, oil, gas, or other hydrocarbons, soils sand, gravel, rock, ground water, or other materials on or below the surface of the Property...". Leasing property for oil and gas exploration that is subject to a conservation easement is inconsistent with CRS §§ 38-30.5-101 *et seq.* which recognizes the importance of preserving land in a natural, open scenic condition and for wildlife habitat uses, and under no circumstance, should not be permitted.

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Conclusion

For the reasons stated above, the nominated parcels in Grand County are inappropriate for mineral leasing and development. There is too much at stake in Grand County to permit this kind of high impact activity, especially without current information and evaluation of relevant issues, especially water quality.

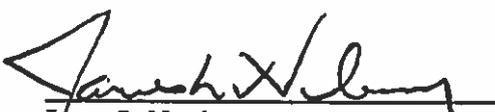
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Sincerely,

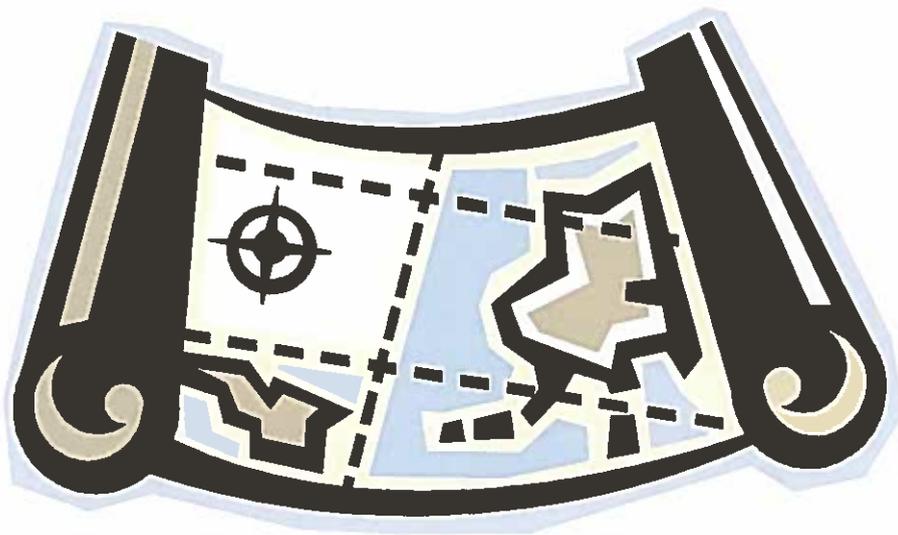

Gary Boringamer, Chairman
Grand County Commissioner, District 3


Nancy Stuart
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cc: Board of Trustees, Town of Kremmling
Board of Trustees, Town of Granby
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Board of Trustees, Town of Hot Sulphur Springs
Board of Trustees, Town of Fraser
Board of Trustees, Town of Winter Park

**GRAND COUNTY
ZONING REGULATIONS**



**LAST AMENDED
May 1, 2012**

- (viii) Additional Best Management Practices (BMP) shall be incorporated if the water quality is affected in any negative manner. These shall include but are not limited to:
- (ix) An Integrated Pest Management (IPM) system that will minimize pest problems shall be approved by Grand County. This IPM will include:
 - (1) Reliable and accurate pest identification.
 - (2) Monitoring pest populations and related damage to ensure treatments will only be applied when necessary and when they will be most effective.
 - (3) Establishment of injury levels that can be tolerated before controls are implemented.
 - (4) Use of combinations of the following treatment methods to control pests in a manner that achieves a high level of effectiveness while minimizing environmental impact:
 - (5) Biological controls - release of predatory/parasitic insects
 - (6) Cultural controls - use of resistant cultivars, encouragement of diverse plant communities, and using optimal irrigation management and other techniques to maximize plant vigor.
 - (7) Physical Controls - sanitation, pruning, protective weed barriers.
 - (8) Chemical Controls - use of products that are target specific, have short lived residual lives and have low environmental impacts.
- (x) Continuous evaluation of turf management practices and pest treatment effectiveness to determine if changes are necessary.
- (e) No disturbance or construction may occur on the proposed golf course site unless approved by the Grand County Board of Commissioners.

(15) Oil and gas exploration and production

This section shall apply to all oil and gas operations within the unincorporated area of Grand County with the exception of those lands where the County's jurisdiction is preempted by federal or state law. In recognition of the need to avoid operational conflicts, yet recognizing the rights of surface owners, the right of the County to determine land uses and the right of the mineral estate to extract minerals, the following additional submittal requirements, review standards and criteria for approval shall apply.

- (a) **Submittal Requirements**
The Applicant shall submit the following:
 - (i) Copies of application forms for all applicable local, state, or federal permits, including Colorado Oil and Gas Conservation Commission (CCOGCC) forms;
 - (ii) Evidence of surface owner notification, of mineral lease agreements and of surface agreements where the surface owner is not a party to the mineral lease;

- (iii) A detailed drawing of the site at a scale of 1 inch to 100 feet, including the dimensions of the site, indicating area in square feet and acres, and the area of the site to be disturbed;
- (iv) The location of all structures, flow lines or pipelines, tanks, wells pits, and any other oil and gas operation facilities or equipment;
- (v) Existing and proposed roads within the site as well as ingress and egress from public or private road;
- (vi) Lease lines, if applicable;
- (vii) On-site features such as floodplain designations, water courses, drainage, utility lines and easements, ditches, wetlands or aquatic habitat, significant plant ecosystems, wildlife habitat and migration routes, geologic features, vegetative cover, dams, reservoirs, mines, and known cultural resources;
- (viii) Existing and proposed topography of the site at intervals of five feet, existing and proposed vegetation, buffers, berms, fences, and other screening devices;
- (ix) Vicinity map, drawn to scale, including: section, township, and range of the site, surrounding public roads and municipal boundaries, adjacent properties and the approximate location of building and their uses within a distance of 1000 feet of any proposed structure, facility, or area to be disturbed;
- (x) Copies of financial guarantees in the form of bonds, letters of credit, cash, certificates of deposit, or other guarantees acceptable to the County, if the Board of County Commissioners determines that financial guarantees are necessary to assure the performance of specific conditions of approval of the development plan. This requirement may be waived by the Board of County Commissioners if the Board is satisfied that individual bonds posted with the COGCC for the proposed operation cover the conditions of the development plan approval granted under this Article, or if the operator posts a blanket bond with the County covering all operations conducted in County in an amount of \$500,000 or more;
- (xi) An operation plan including the method of and schedule for the drilling completion, production, abandonment and reclamation phases of the operation.

(b) **Liability Insurance**

For any facility permitted under this article, the applicant shall submit a certificate of insurance to the Grand County Department of Planning and Zoning, showing that a policy of comprehensive general liability insurance or a self-insurance program approved by the Colorado Insurance Commission, in the amount of no less than \$400,000.00 per occurrence, insuring the applicant against all claims or causes of action made against the applicant for damages arising out of the drilling, maintenance, operation or other work done with respect to such proposed facilities. The policy shall be written by a company authorized to do business in the State of Colorado, unless the applicant is self-insured. The certificate shall require at least 30 days' notice to the County prior to termination of coverage for any reason. If the insurance policy lapses or becomes void for any reason whatsoever, the approval shall cease to be valid until a new insurance certificate is provided and filed with planning. All approved oil or gas or related activity shall cease, consistent with safety considerations, until the applicant provides evidence that insurance coverage in the prescribed amount is in effect.

- (c) **Performance Security**
The applicant shall provide one form of the following security to ensure compliance with mitigation requirements set forth in this article and specific conditions of approval for facilities: \$5,000.00 performance bond for each facility; \$50,000.00 countywide blanket bond for all facilities operated by the applicant within the county; irrevocable letter of credit; or equivalent financial security acceptable to the county. Conditions of approval covered by this performance security shall consist of mitigation measures addressing specific impacts affecting the general public and/or adjacent landowners by the applicable performance standards contained in these Regulations. Reclamation activities which fall under Colorado Oil and Gas Conservation Commission jurisdiction are exempted from this performance security coverage.
- (d) **Location of Oil and Gas Wells**
- (i) The siting of a facility shall adhere to the standards outlined in the Grand County Zoning Regulations to the maximum extent practical and shall lie within the Colorado Oil & Gas Conservation Commission (CCOGCC) determined drilling window, or in a location that complies with CCOGCC rules and regulations;
 - (ii) No facility shall be sited in a geologic hazard area; an area with slopes exceeding 30 percent; an area of wetlands under the jurisdiction of the U.S. Army Corps of Engineers; an area within a floodway of a stream or river as determined by a state licensed professional engineer;
 - (iii) Wells and any associated oil and gas operation facility or structure requiring a building permit shall not be located in subdivisions containing lots of ten acres or less;
 - (iv) At the request of either the operator, surface owner, or any other landowner, County Planning staff will conduct a public site visit with all interested parties to evaluate locations, compliance with County Regulations and mitigation that may be required. When possible this site visit will be coordinated with site visits required by CCOGCC rules;
 - (v) If the CCOGCC spacing rules require a well to be located contrary to the siting required by these Regulations, the applicant shall apply for a variance with the CCOGCC to meet the County's well location requirements. If such a variance is not granted, the location as required by these Regulations shall be complied with to the maximum extent possible. The Board of County Commissioners may impose additional mitigation measures as necessary to protect the public health, safety, and welfare when the well is not located as required by these regulations;
 - (vi) No oil and gas operation shall violate the setbacks of the applicable zoning district in which the operation is located. In order to buffer oil and gas operations from surrounding properties, wells and any associated oil and gas operation facility or structure requiring a building permit shall meet the following setbacks:
 - (1) A minimum of five hundred feet (500') from the site perimeter of the facility to any occupied building or occupied building permitted for construction, unless verified written consent is obtained from the affected property owner;
 - (2) A minimum of three hundred feet (300') from the site perimeter of the facility to the closest platted subdivision lot line, unless verified written consent is obtained from the affected property owner; and;
 - (3) A minimum of two hundred feet (200') from the site perimeter of the facility to any public right-of-way;

- (4) A smaller set back may be granted if the surface owner agrees and if there is no adverse impact on adjacent properties created by the reduced setback;
- (vii) If the CCOGCC spacing rules require location of wells at a distance less than these minimum requirements, the applicant shall apply for a variance with the CCOGCC to meet the County's setback requirements. If such a variance is not granted, the setbacks specified in these regulations shall be complied with to the maximum extent possible. The Board of County Commissioners may impose additional mitigation measures as necessary to protect the public health, safety, and welfare where these setbacks cannot be met.
- (e) **A maximum of one oil/or gas well is allowed per 40 acres.**
- (f) **Review Standards and Criteria for Approval**
A permit for oil and gas operations shall be approved, conditionally approved or denied in accordance with the standards set forth in Section XI and the following standards and criteria:
 - (i) **Noise**
 - (1) Any equipment used in drilling, completion, or production of a well must comply with the maximum permissible noise levels set forth in CCOGCC Regulation 802.
 - (2) Where a facility does not comply with the required setback or other portions of the performance standards, additional noise mitigation may be required. In determining noise mitigation, specific site characteristics shall be considered, including but not limited to, Nature and proximity of adjacent development; Prevailing weather patterns, including wind directions; Vegetative cover on or adjacent to the site; Topography.
 - (3) One or more of the following additional noise abatement measures, listed below:
 - (a) Acoustically insulated housing or covers enclosing any motor or engine;
 - (b) Screening of the site or noise emitting equipment by fence or landscaping;
 - (c) Solid wall or fence of acoustically insulating material surrounding all or part of the facility.
 - (d) A noise management plan specifying the hours of maximum noise and the type, frequency, and level of noise to be emitted; and
 - (e) Any other noise mitigation measures required by the CCOGCC.
 - (f) Construction of buildings or other enclosures may be required where facilities create noise and visual impacts non-mitigatable because of proximity, density and/or intensity of adjacent land use.
 - (ii) **Visual Mitigation in Visually Sensitive Areas**
 - a. Well sites located within a visually sensitive area shall be mitigated according to the provisions of this section. Visually sensitive areas shall be defined as any area within 1000 feet of a residence, school, health care facility, or place of public assembly, 500 feet from a public road, and 500 feet from a property line. Any facility within a visually sensitive area shall utilize the following mitigation measures:

Visual Mitigation Measures

Landscaping	Equipment and Size
<p>Landscaping Requirements:</p> <ul style="list-style-type: none"> -Five (5) foot berm with no greater than a 3:1 slope ratio; -Min. 15% of total developed area; -Placed on perimeter of site; -One specimen tree per 200 s.f. of landscaped area; -Min. 50% of trees must be evergreen; -One 5-gal shrub per 100 s.f. of landscaped area; -Landscape plan by certified landscape architect or arborist and include species suitable for climate and soils type; -Landscaping may be placed on adjacent property. -Irrigation required for first 2 years after establishment of vegetation -Financial guarantee provided to County in amount equal to value of landscaping. 	<p>Reclaim drilling pad up to the drilling anchors.</p> <p>Production equipment will be no greater than 10 feet tall (i.e. horizontal separator/dehydrator and low profile pumps*.)</p> <p>There will be no motorized production equipment on the site or production equipment will use electric motors instead of gas-reciprocating engines.</p>

(iii) Air Quality

Air contaminant emissions shall be in compliance with the permit and control provisions of the Colorado Air Quality Control Program, Title 25, Article 7, C.R.S.

(iv) Water

(a) An approved well permit shall comply with the following requirements:

- (1) All CCOGCC water well testing and water-bearing formation protection procedures and requirements.
- (2) All applicable state water quality standards and classifications established by the Water Quality Control Commission.
- (3) Water Right Determination and Administration Act and the Ground Water Management Act for beneficial uses of produced water related to coal bed methane production.
- (4) All Bradenhead and water well testing data shall be forwarded to the Grand County Department of Planning and Zoning.

(v) Hydraulic Fracturing

The permit holder shall provide a list of all chemicals used in Hydraulic Fracturing operation to the Grand County Department of Planning and Zoning for review and approval.

(vi) Inspections

Any site under an approved development plan may be inspected by the County at any time, to ensure compliance with the requirements of the approved development plan, provided that one hour's prior notice is given to the contact person at the telephone number supplied by the applicant. Calling the number (or leaving a message on an available answering machine or voice mail service at the number) at least one hour in advance of the proposed inspection shall constitute sufficient prior notice if the contact person does not answer. By accepting an approved development plan, the applicant grants its consent to such inspections.

(vii) Operational Conflict

Special exceptions to these regulations may be granted where the requirements of these regulations actually conflict in operation with the requirements of the Colorado Oil and Gas Conservation Act or implementing regulations. All

applications where a special exception due to operational conflicts is requested shall be heard in a noticed public hearing by the Board of County Commissioners acting in a quasi-judicial capacity. The applicant shall have the burden of pleading and proving an actual, material, irreconcilable operational conflict between the requirements of these regulations and those of the COGCC in the context of a specific application.

For the purpose of this section, an operational conflict exists where the County condition of approval or regulation actually conflicts in operation with the state statutory or regulatory scheme, and such conflict would materially impede or destroy the state's interest in the development, production, and utilization of oil and gas resources in the state, and the protection of the public health, safety and welfare. An operational conflict may occur where the County regulation prohibits an activity which the COGCC, or its valid regulations, has clearly authorized, or where the County regulation authorizes an activity which the COGCC, or its valid regulations, has clearly prohibited.

Additional County requirements in areas regulated by the COGCC, which also falls within County land use powers and which are necessary to protect the public health, safety and welfare under the facts of the specific application presented, and which do not impose unreasonable burdens on the applicant, shall be presumed not to present an operational conflict. If the Board of County Commissioners finds, based upon competent evidence in the record, that compliance with the requirements of this section shall result in an operational conflict with the state statutory and regulatory scheme, a special exception may be granted, in whole or in part, but only to that extent. The Board of County Commissioners may condition the approval of a special exception as necessary to protect the public health, safety and welfare by mitigating any adverse impacts arising from the grant of approval

(16) ADULT ORIENTED USES shall be subject to the following additional provisions:

- (a) No person may operate or cause to be operated an adult oriented use within 1,000 feet of any of the following uses or property boundaries, whether the use or zone district listed below is unincorporated Grand County, an adjacent county, or within an incorporated Town:
 - (i) Any church, school, child care or day care facility, public park, playground, outdoor recreational area or recreation facility, public facility or library.
 - (ii) Any single family or multi-family dwelling or any boundary of any R-Residential, E-Estate or M-Mobile Home Zone Districts.
 - (iii) Any establishment holding a liquor license.
 - (iv) Of another adult oriented uses.
- (b) For purposes of this section, the distance between any adult oriented use and any use or zone district boundary outlined in Section 16(a) above, shall be measured in a straight line, without regard to intervening structures or objects or political boundaries, from the closest property line of any adult oriented use to the nearest property line of any use or zone district boundary outlined in Section 16(a) above. No person may operate or cause to be operated an adult oriented use within 1,000 feet of another adult oriented use.
- (c) No person may cause or permit the operation, establishment or maintenance of more than one adult oriented use within the same building or structure or portion thereof, such as in a shopping center. An adult oriented use may include one or more types of adult oriented use provided it has one address and is operated as a single use entity that has one sales tax license number.

**APPENDIX D
TIM THOMSON MEMO
AND
CPW RESPONSE AND MAP**

Subject: Fwd: Grouse Memo to Whit
Date: Monday, November 4, 2013 2:21:18 PM ET
From: Tim Thomson <timbthomson@gmail.com>
To: Whit Stolz <wfstolz@hotmail.com>

----- Forwarded message -----

From: Cowardin - DNR, Michelle <micheile.cowardin@state.co.us>
Date: Fri, Oct 18, 2013 at 8:47 AM
Subject: Re: Grouse Memo to Whit
To: Tim Thomson <timbthomson@gmail.com>

Tim,
This looks good to me. Thanks for asking for my review.

Mi

On Fri, Oct 18, 2013 at 8:01 AM, Tim Thomson <timbthomson@gmail.com> wrote:

Michelle-

Attached is a memo from me to Whit. I wanted you to look it over and give your blessing to it. I use your name in it so I thought it was only right that you got to look at it for accuracy before I sent it. I was assured that this was not going in comments so I went ahead and included specific gps coordinates. Let me know what you think. I will be out of cell phone service most of the day today and then will be out hunting starting tomorrow.

Thanks

Tim Thomson

--
Michelle Cowardin
Wildlife Biologist
Colorado Parks and Wildlife
Hot Sulphur Springs, CO
970-725-6212

To: Whit Stolz

From: Tim Thomson

Date: 10/17/13

RE: Sage Grouse Observations

Notes regarding Sage Grouse sightings

September 24, 2012

Tim Thomson

While gathering cows, there were approximately 15 – 20 Sage Grouse Flushed. A picture was captured of one Male that did not flush at the same time. The location was 40 deg 12' 16.45"N. 106 deg 33'49.59"W. at an elev of 9418 ft. The habitat consisted predominantly of open sage brush with a distant perimeter of aspen and shrubs. The information was passed along to Michelle Cowardin at the Division of Wildlife.

August 9, 2013

Michelle Cowardin (Biologist with CPW), Whit Stolz, Tim Thomson

A search was conducted in areas of the Middle Park State Lease, outside of the Sage Grouse occupied boundary, where there had been a previous sighting of Sage Grouse. There was a large amount of Sage Grouse scat found throughout the search area. There was also one Sage Grouse flushed. The habitat was predominately open sage brush including a small scattering of shrubs and seemed to be very conducive habitat for various sage grouse stages.

September 17, 2013

Michelle Cowardin (Biologist with CPW), Chuck Cesar (retired biologist), Tim Thomson

Based on previous sightings of Sage Grouse in the Middle Park State Lease, a search was conducted of those areas thought to be important habitat. The search area was made up of sage brush dominated areas with a distant perimeter of aspen stands but also included a small scattering of some shrubs and appeared to be very conducive habitat for various sage grouse stages. The result of the search was the flushing of two males as well as the discovery of a dead sage grouse in addition to numerous observations of Sage Grouse scat in the search area.

Notes and Observations of Sage Grouse activities in Sections 27 – 28, 33 -34

For the six years that I have been actively engaged in the documenting of sage grouse activities on the ranch, it has been observed that the area to the south and southwest of Heini Reservoir (Sec 27 – 28, 33 - 34) has served as both seasonal habitat but also critical winter habitat. The habitat consists of sage brush of adequate height to provide excellent winter range. It is within ½ mile of an active lek (Kastle Lek) ([REDACTED])* and within 4 miles of several other active leks located on the east side of highway 40. In the winter of 2012 / 2013 it was observed by both Division of Wildlife and myself that 150+ grouse were using this area. In a 2001 sage grouse study conducted by the DOW, radio collar data results show this area to be used during the breeding season, the summer season as well as during the winter season. Around 2005 the BLM did mechanical brush treatments of this area to enhance sage grouse habitat.

Other observations

- Sage grouse have been observed in the hay fields, particularly a field containing alfalfa (section 22). For several years, in partnership with HPP, there has been an aerial clover seeding program in place to establish clover on the fringes of hay meadows for the benefit of sage grouse.
- In both 2012 and 2013 I observed a female sage grouse with chicks using habitat consisting of predominately aspen. (40 deg 12' 01"N. 106 deg 30' 05"W).
- In 2013 I observed a female with chicks in an area containing sage mixed with immature aspen, Juniper, and other shrubs (40 deg 10' 49" N. 106 deg 28' 17").
- In April/May of 2010 and 2011 (as well as historically by others), grouse were seen displaying on what we termed the "Horseshoe Lek" ([REDACTED])*.
- In April/ May 2013 grouse were consistently seen displaying on the road to the Alfalfa meadow (40 deg 12' 31" N. 106deg 27' 34" W). This is just south of where a historical lek was located.
- In April/ May 2012 grouse were observed by me and DOW displaying on what was termed the "Tyler Lek" ([REDACTED])*. This is at approx 9100' of elevation.

As a result, the Ranch and significant areas to the East and West of the Ranch provide an important mix of intact non-fragmented habitat that is used during all life-history stages of the sage grouse.

*GPS coordinates redacted at request of CPW

ID	DATE	SIGN TYPE	FLUSHED
107	9/24/2012	FLUSHED	20
115	8/9/2013	FLUSHED	1
116	8/9/2013	SCAT	0
117	8/9/2013	SCAT	0
118	8/9/2013	SCAT	0
124	9/17/2013	DEAD GrSG	0
125	9/17/2013	FLUSHED	2



Greater Sage-Grouse Sign on SLB Property West of Occupied Range in Middle Park

- Dead GrSG GrSG Occupied Range BLM SLB
- Flushed GrSG Private USFS
- GrSG Scat

M. Cowardin
Oct 2013