

## VI. APPENDICES

### Appendix A: Available Funding Opportunities for GrSG Habitat Conservation

Table A-1. Specific funding opportunities identified for GrSG habitat conservation.

<b>Colorado Division of Wildlife (CDOW)</b>						
<b>Grant / Program</b>	<b>What land is eligible?</b>	<b>Length of Agreement</b>	<b>Easements</b>	<b>Cost Share</b>	<b>Applicant obligations</b>	<b>Contact Information</b>
Colorado Species Conservation Partnership Program (CSCP)	Any land where an easement or management plan are needed to benefit sage-grouse.	Variable	one-time, up-front payment	Variable	Develop a conservation plan and comply with the terms of the easement, or develop a plan and assist with the cost, establishment, and maintenance of conservation practices.	Ken Morgan (303)291-7404 <a href="http://wildlife.state.co.us/">http://wildlife.state.co.us/</a>
Habitat Partnership Program (HPP)	All land is eligible where wildlife/human interactions occur.	Variable	N/A	Variable	Contact local District Wildlife Manager and develop proposal. Must be able to evaluate the success of project based on objectives.	Local District Wildlife Manager <a href="http://wildlife.state.co.us/">http://wildlife.state.co.us/</a>
Cooperative Habitat Improvement Program (CHIP)	All private land for which the habitat improvement has been approved by the area habitat biologist	10 years	N/A	85%	Applicant must provide 15% of cost of habitat improvement and must ensure practice is maintained through the term of the contract.	CDOW (970)255-6185 <a href="http://wildlife.state.co.us/">http://wildlife.state.co.us/</a>
Habitat Stamp Program	All land – primarily for deer/elk winter range and hunting and fishing opportunities	Variable	N/A	variable	N/A	Ken Morgan (303)291-7404 <a href="http://wildlife.state.co.us/">http://wildlife.state.co.us/</a>

Table A-1 (con't). Specific funding opportunities identified for GrSG habitat conservation.

Natural Resources Conservation Service (NRCS)							
Grant / Program	What land is eligible?	Length of Agreement	Rental Payments	Easements	Cost Share	Applicant obligations	Contact Information
Conservation Security Program (CSP)	Private agriculture operation lands	5-10 years	Flat rates - based on Conservation work applied to land	N/A	50—65%	Record keeping of past and present conservation efforts	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Conservation Reserve Program (CRP)	Highly erodible cropland. Marginal pastureland is also eligible.	10-15 years	Payment based on length of agreement and average rental rates for the county.	N/A	50%	Develop and follow a plan for the conversion of cropland to a less intensive use. Also, assist with the cost, establishment, and maintenance of conservation practices.	Local FSA or NRCS office. <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Conservation Reserve Program Continuous Sign-up	Highly erodible cropland. Marginal pastureland is also eligible.	10-15 years	Payment based on length of agreement and average rental rates for the county	N/A	50% to 90%	Develop and follow a plan to implement riparian buffers, wildlife habitat buffers, wetland buffers, filter strips, grass waterways, shelterbelts, living snow fences, contour grass strips, salt tolerant vegetation, or shallow water areas for wildlife. Also, assist with the cost, establishment, and maintenance of conservation practices.	Local FSA or NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Environmental Quality Incentives Program (EQIP)	All private land in agricultural production is eligible; includes cropland, grassland, pastureland and non-industrial private forestland.	1-10 years	N/A	N/A	up to 75%	Develop and follow an EQIP plan that describes the conservation and environmental purposes to be achieved; assist with installation costs.	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Farm and Ranchland Protection Program (FRPP)	Private land that contains prime farmland or other unique resources and is subject to a pending easement from an eligible entity.	Perpetual easement	N/A	one-time, up-front payment	N/A	Continue to use the land for agricultural purposes. Develop a conservation plan and comply with the terms of the easement.	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Grassland Reserve Program (GRP)	Private land that includes grassland, forbs, or shrubs (including rangeland and pastureland); and land that historically was dominated by grasses, forbs, and shrubs and has significant value for plants and animals.	10-30 year agreement, or perpetual easement	annual payment based on length of agreement	one-time, up-front payment on perpetual	up to 100%	Develop and follow a plan for the restoration and maintenance of grasslands. If necessary, assist with the cost of restoration. Can maintain agricultural use with development of a conservation plan.	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>

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Natural Resources Conservation Service (NRCS)							
Grant / Program	What land is eligible?	Length of Agreement	Rental Payments	<u>Easements</u>	Cost Share	Applicant obligations	Contact Information
Wetlands Reserve Program (WRP)	Most private wetlands converted to agricultural use prior to 1985 are eligible. Wetland must be restorable and suitable for wildlife benefits.	10 years, 30 years, or perpetual easement	N/A	one-time, up-front payment	up to 100%	Develop and follow a plan for the restoration and maintenance of the wetland. If necessary, assist with the cost of restoration. Also, must give up agriculture production rights.	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>
Wildlife Habitat Incentives Program (WHIP)	All private land is eligible, unless it is currently enrolled in CRP, WRP, or a similar program	5-15 years	N/A	N/A	up to 75%	Prepare and follow a wildlife habitat development plan; assist with installation costs.	Local NRCS office <a href="http://www.nrcs.usda.gov">www.nrcs.usda.gov</a>

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U.S. Fish and Wildlife Service (USFWS)							
Grant / Program	What land is eligible?	Length of Agreement	Rental Payments	<u>Easements</u>	Cost Share	Applicant obligations	Contact Information
Landowner Incentive Program (LIP)	All private and tribal land	Variable	Yes	Short and long term	up to 75%	Personnel from state agency will need to submit application, USFWS will approve, and CDOW will administer grant in cooperation with the landowner.	Ken Morgan (303)291-7404 <a href="http://wildlife.state.co.us/">http://wildlife.state.co.us/</a>
Intermountain West Joint Venture Partnership	Projects considered acceptable for funding include long-term protection, restoration, or enhancement of any bird habitat. Joint Venture emphasis is centered upon on-the ground conservation.	Up to 30 years	N/A	Yes	50%	N/A	David Klute – Colorado Representative (303)291-7320 <a href="http://www.iwjv.org">www.iwjv.org</a>
North American Wetland Conservation Act	State, private, Tribal, Federal?	Variable	No	Long-term	50%	Work with local USFWS office, but grant is administered through USFWS Migratory Bird Office	Local USFWS office or <a href="http://www.iwjv.org/">http://www.iwjv.org/</a>

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U.S. Fish and Wildlife Service (USFWS)							
Grant / Program	What land is eligible?	Length of Agreement	Rental Payments	<u>Easements</u>	Cost Share	Applicant obligations	Contact Information
North American Wetland Conservation Act, Small Grants	State, private, Tribal, Federal	Variable	No	Long-term	50%	Work with local USFWS office, but grant is administered through USFWS Migratory Bird Office (Up to \$50K/grant)	Local USFWS office or <a href="http://www.iwfv.org/">http://www.iwfv.org/</a>
Partners for Fish and Wildlife	All private land, wetland and riparian habitat has been a primary focus along with some treatment of sagebrush.	Variable, most projects delivered in 1-3 months	N/A	N/A	75-100%	Work with USFWS Biologist to develop project plan. Follow management actions for duration of wildlife extension agreement.	Bob Timberman (970) 723 4926 <a href="http://www.coloradopartners.fws.gov">www.coloradopartners.fws.gov</a>
Private Stewardship Grants Program	Private land	Variable	Yes	No	Variable	The contract and plan must provide quantifiable measures to evaluate the success of the project. The grant is administered through USFWS Ecological Services.	Local USFWS office <a href="http://grants.fws.gov/">http://grants.fws.gov/</a> (applications due 12/03 or 1/04)
Section 6 Conservation Grants	State, private, Tribal, Federal	Variable	N/A	N/A	up to 75%	Work with local USFWS office, but grant is administered through USFWS Ecological Services	Local USFWS office <a href="http://grants.fws.gov/">http://grants.fws.gov/</a>
State Wildlife Grants	State, private, Tribal, Federal	Variable	Yes	Short term and long term	75% planning, 50% implementation	States, but not Tribes, must develop comprehensive wildlife management plans	Jim.Guthrie@co.state.us or local USFWS office <a href="http://grants.fws.gov/">http://grants.fws.gov/</a>
Tribal Wildlife Grants	Tribal	Variable	N/A	N/A	100%	Up to \$250,000 / tribe	Local USFWS office <a href="http://grants.fws.gov/">http://grants.fws.gov/</a>

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<b>Non-Governmental Organizations (NGOs)</b>							
<b>Agency / Organization</b>	<b>Grant / Program</b>	<b>What land is eligible?</b>	<b>Length of Agreement</b>	<b>Easements</b>	<b>Cost Share</b>	<b>Applicant obligations</b>	<b>Contact Information</b>
<b>Audubon Society</b>	N/A	Stress bird habitat and ecosystem restoration	Variable	N/A	Variable	N/A	www.audubon.org
<b>Pheasants Forever</b>	N/A	Mostly private lands to acquire lands for public use.	Variable	N/A	Variable	N/A	www.pheasantsforever.org
<b>Great Outdoors Colorado (GOCO)</b>	Legacy Initiative/ Open Space/ Wildlife Grants	All private and public land where state agencies, non-profit conservation organizations, local governments, or private land owners are interested in conservation and land protection.	Variable	Possible	Variable, usually requires a minimum 25% match	Personnel from local governments, non-profit land conservation organizations, CDOW, and Colorado State Parks need to be submit proposal and manage contract.	www.goco.org (303)863-7522 info@goco.org
<b>Mule Deer Foundation</b>	N/A	All land that is critical to wildlife	Variable	Possible	Variable	Must go through USFS, BLM or one of their corporate partners	www.muledeer.org 1-888-375-3337
<i>Quail Unlimited</i>	N/A	All land that potentially provides habitat for quail and (sometimes) sage-grouse	Variable	Possible	Variable	Must go through USFS, BLM or one of their corporate partners	www.qu.org
<b>Rocky Mountain Elk Foundation</b>	N/A	All land that is critical to wildlife	Variable	Possible	Variable	Must go through USFS, BLM or one of their corporate partners	www.rmef.org
<b>National Fish and Wildlife Foundation</b>	N/A	Special grants for research on all land that potentially provides habitat for fish and wildlife.	Variable	Possible	Minimum 1:1	Non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.nfwf.org

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<b>National Forest Foundation</b>	N/A	On or adjacent to National Forests or Grasslands	Variable	N/A	1:1 ratio with private	Non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.natlforests.org
<b>North American Grouse Partnership</b>	N/A	All land that provides habitat to sage or other grouse	Variable	N/A	Variable	Non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.grousepartners.org
<b>The Nature Conservancy</b>	N/A	All private and public land where agencies, non-profit conservation organizations, local governments, or private land owners are interested in conservation and land protection.	Variable	Possible	Variable	Federal and non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.nature.org
<b>National Wildlife Turkey Federation</b>	N/A	All private and public land where agencies, non-profit conservation organizations, local governments, or private land owners are interested in conservation and land protection.	Variable	Possible	Variable	Federal and non-federal partners, community-based organizations, tribes, educational institutions, and other non-profit organizations.	www.nwtf.org

## **Appendix B: Amendment 14 – Predator Control Changes**

Amendment 14: Prohibited Methods of Taking Wildlife (1996)

Be it Enacted by the People of the State of Colorado:

Article XVIII of the Constitution of the State of Colorado is amended by the addition of a new Section 12, to read:

Section 12. Prohibited methods of taking wildlife.

(1) It shall be unlawful to take wildlife with any leghold trap, any instant kill body-gripping design trap, or by poison or snare in the state of Colorado.

(2) The provisions of subsection (1) of this section shall not prohibit:

(a) The taking of wildlife by use of the devices or methods described in subsection (1) of this section by federal, state, county, or municipal departments of health for the purpose of protecting human health or safety;

(b) The use of the devices or methods described in subsection (1) of this section for controlling:

(I) wild or domestic rodents, except for beaver or muskrat, as otherwise authorized by law; or

(II) wild or domestic birds as otherwise authorized by law;

(c) The use of non-lethal snares, traps specifically designed not to kill, or nets to take wildlife for scientific research projects, for falconry, for relocation, or for medical treatment pursuant to regulations established by the Colorado wildlife commission; or

(d) The use of traps, poisons or nets by the Colorado division of wildlife to take or manage fish or other non-mammalian aquatic wildlife.

(3) Notwithstanding the provisions of this section 12, the owner or lessee of private property primarily used for commercial livestock or crop production, or the employees of such owner or lessee, shall not be prohibited from using the devices or methods described in subsection (1) of this section on such private property so long as:

(a) such use does not exceed one thirty day period per year; and

(b) the owner or lessee can present on-site evidence to the division of wildlife that ongoing damage to livestock or crops has not been alleviated by the use of non-lethal or lethal control methods which are not prohibited.

(4) The provisions of this section 12 shall not apply to the taking of wildlife with firearms, fishing equipment, archery equipment, or other implements in hand as authorized by law.

## **Appendix C: Best Management Practices (BMP's)**

### **BEST MANAGEMENT PRACTICES (BMP's)**

#### **Methods to Reduce Impacts to Greater Sage-grouse**

Kim Kaal, CDOW & Parachute, Piceance Roan Creek Subcommittee developing the local Plan for Greater Sage-grouse Conservation, July 2007

Best management practices (BMP's) are recommendations to guide landowners, land users, and land managers to lessen the impact of oil and gas development activities on Greater Sage-grouse through mitigation, less disruptive drilling and production practices, and improved infrastructure development. They are a site-specific means to minimize negative effects on sage-grouse. These practices are intended to be used as components of, or in addition to, requirements of an APD or leasing agreement. They can be used alone as single actions or together in a comprehensive management program. The intent of this list is to provide action-oriented management practices based on the latest science and to encourage voluntary implementation of these practices.

This list was compiled to provide land managers, owners, and users, with tools that they can use; this document does not have regulatory authority to enforce their implementation. Only the leasing authority, when appropriate, can require any actions on the part of a leaseholder. It is, however, important to note, that the implementation of as many of these practices as feasible, will serve to minimize the impacts of oil & gas activity on sage-grouse and assist in the conservation of these birds. The BMP's listed here directly relate to many of the strategies created in the PPR plan. As such, it is important to use a comprehensive approach to the strategies and BMP's.

There are difficulties with providing a list of specific best management practices. Changing industry knowledge and practices, new scientific information, and the challenges of field verification and monitoring all present obstacles in the development and maintenance of such a list. The best known management practices must inherently evolve with the changing conditions in industry, wildlife management, and technology. These are not "one-size-fits-all" tasks that can be used for every situation, nor are they a cookbook to create a specific product. It must be understood, therefore, that close collaboration in the implementation of these guidelines is necessary between industry and wildlife personnel.

#### **Siting and Construction**

- Involve CDOW personnel early in the survey for wildlife issues prior to development. Plan around issues accordingly.
- In the project planning phases use Natural Diversity Information Source and any additional habitat/wildlife mapping available prior to development.
- Consult with CDOW on surface occupancy within 4 miles of any greater sage-grouse leks within suitable habitat.
- Within suitable sage-grouse habitat, avoid all surface disturbance within 0.6 mile of any Greater Sage-Grouse lek between March 15 and May 15, except when such activities would not disrupt breeding or nesting activities, as determined in consultation with CDOW (and BLM if on public land)..



- Within suitable sage-grouse habitat, avoid breeding/nesting season (March 15 – July 7) road construction, drilling, and well completion within 4 miles of any active or potentially active Greater Sage-Grouse leks except when such activities would not disrupt breeding or nesting activities, as determined in consultation with CDOW (and BLM if on public land).
- Within 4 miles of an active or potentially active sage-grouse lek, keep total surface disturbance within sage-grouse habitat to 1% or less. (After reclaimed lands re-grow sufficient native vegetation they would no longer be counted towards the calculated percentage.)
- Within suitable sage-grouse habitat, avoid breeding/nesting season (March 15 – July 7) travel on existing roads within view of potentially active sage-grouse leks to portions of the day between 9:00 am and 5:00 pm .
- Use state of the art technology to protect existing vegetation. Use of mats if possible for drilling operations to preserve topsoil and vegetative root stock.
- Wherever mats cannot be used, conserve soil horizons and segregate topsoil from subsoil. Manage topsoil to maintain soil microbe health and viability.
- Minimize habitat fragmentation by limiting surface disturbance by reducing the number of well pads per section.
- Control public access in suitable habitat (i.e. gate roads, etc.). Minimize the impact of newly developed or opened areas by consolidating facilities.
- Perform voluntary onsite (i.e. CDOW & BLM) on private lands to identify issues prior to ground disturbance.
- Consolidate pipeline corridors and economize gas transportation. Encourage cooperative gas carrying agreements.
- Place road and pipeline right-of-ways such that they avoid critical habitat and mitigate their effects wherever possible.
- Cluster wells on multiple well pads and place associated production to maximize interim reclamation of well pads.
- Consolidate oil and gas production facilities to reduce disturbance to wildlife and minimize long term impacts. Reduce the number of locations where water and oil would be hauled off by truck.
- Preplan and adequately size infrastructure and facilities to accommodate current and future gas production.

#### Drilling Operations and Production

- Simultaneously complete wells to facilitate faster drilling and development rates.
- Strive to centralize hydraulic fracturing operations to minimize surface impacts.
- During production phase restrict well site visitations in breeding season (Mar. 1 – May 15) within 0.6 miles of active and potentially active GrSG leks to portions of the day after 9:00 am and before 5:00 pm.
- Strive to economize visitation to wells by use of multi-function contractors.
- Use early and effective reclamation techniques, including interim reclamation, to speed return of disturbed areas to use by grouse. (May require multiple reclamation efforts and multiple soil amendments.)
- Reduce long-term footprint of facilities to the smallest practical space.

- Utilize reclamation seed mixes consisting of native bunchgrasses, forbs and appropriate subspecies of big sagebrush.
- Practice reclamation techniques that speed recovery of pre-existing vegetation. (e.g. brush-beating of sage brush for site clearance, retention of topsoil with native seed)
- Avoid aggressive, non-native grasses (e.g. intermediate wheatgrass, pubescent wheatgrass, crested wheatgrass, smooth brome, etc) in reclamation seed mixes.
- Make every effort to aggressively control noxious and invasive weed species based on weed management plan that strives to minimize the impact to non-target plant species.
- Recycle and reuse water on site where possible to reduce truck traffic. (i.e. closed loop).
- Educate employees and contractors on best management practices, environmental regulations, and raise awareness on sage-grouse needs.
- Encourage industry participation in CDOW's Operation Game Thief program and immediately report all potential poaching incidents. Educate industry and their contractors on the importance of poaching and wildlife harassment mitigation.
- Create development plans to phase development to maintain sage-grouse habitat.
- Install automated systems, including high tank alarms, emergency shut down and facilitate remote monitoring.
- Expediently skim and eliminate oil from produced water ponds and reserve pits, and exclude wildlife and sage-grouse with fencing and or netting.
- Protect wetlands, drainages, and riparian areas from erosion, sedimentation and spills. Map wetlands prior to development to identify and properly permit these sensitive areas. Restore to functional condition & reclaim areas of erosion.
- Consider wetland banking if feasible.
- Facilitate increased communication and cooperation between stakeholders, companies and agencies.

#### Transportation

- Manage travel and prohibit off road travel. Manage development of road networks through transportation planning, and reduce habitat fragmentation.
- Restrict and monitor vehicular speed to reduce wildlife collision potential, increase safety, and minimize dust generation.
- Encourage carpooling, transportation coordination or provide mass transport options for workers to work sites. Consider advantages of man camps.

#### Environmental

- Restore functional wetlands.
- Spread quick germinating site adapted native seed or sterile non-native for interim reclamation on cut and fill slopes of well pads and roads. Right-of-way are final reclamation not interim.
- Develop site specific reclamation plans and consult with CDOW on seed mixes, apply seed most effectively during the late fall and early winter. Assess reclamation success at least annually through photo documentation, vegetation plots, documentation of invasive weeds and erosion. Evaluate reclamation in different areas that represent different elevations, vegetative communities, slope aspects, water proximity.

- Cooperate with CDOW on wildlife management issues. Provide opportunities for hunter outreach, education and conservation on private lands. Consider hunting leases on private lands or land exchanges.
- Compile maps containing wildlife information including mule deer, elk, sheep, sage-grouse, raptor, wildlife usage etc.
- Track wildlife habitat improvements or changes on maps, photographs, and other documentation.
- Monitor and map wildlife presence or usage areas. Document using photographs, maps and annual reports as to deer and elk usage. Identify locations of native fish (Cutthroat trout) and consider stream habitat improvements. Compile information on maps to track changes and document occurrences.
- With the exception of exclusionary fencing install high tensile or post and rail fences and or remove all fencing that is a hazardous to SG.
- Install raptor perch deterrents on fences in sage-grouse habitat.
- Encourage retrofitting of existing powerlines and other overhead structures to deter raptor perching where utility corridors impact Greater Sage-grouse seasonal habitats.
- Construct grazing management plans and annually access grazing regiment to meet SG habitat requirements. (check grazing strategy for more detail needed)
- Engage in or fund CDOW and private research to develop methods for impact reduction or habitat improvement.
- Reduce noise effects using special mufflers, equipment housing, installation of sound barriers, earthen berms, etc. in particularly sensitive SG areas.
- Apply certified weed free mulch to reclaimed areas to preserve seed and maintain soil moisture.
- Allow no pets on site and report feral animals to County Animal Control Officers.
- Fence livestock out of newly reclaimed areas where appropriate or practical until reclamation becomes established. Once fences are no longer needed removing fencing material and dispose of properly.
- Consult with CDOW/BLM/USFS on wildlife habitat enhancement projects, reclamation planning, noxious weed control, riparian habitat restoration, grazing management, geographic area specific seed mixes.
- Consider putting lands under conservation easement.
- Maintain voluntary compliance on private lands with all state and federal environmental regulations.

#### Adaptive Management & Monitoring

- The PPR LWG encourages creative solutions to allow for both energy development and the persistence sage-grouse in the Piceance Basin. Exceptions to timing limitations and limitations on surface disturbance acres may be granted in order to allow implementation of other strategies designed to minimize impacts to sage-grouse (e.g. temporally clustered development). Alternate strategies must be based on the best available science and agreed to by the Colorado Division of Wildlife.
- All strategies implemented to minimize impacts to sage-grouse during energy development must be continually evaluated for effectiveness. If the three-year running

average high male lek count continually declines for three years, consider changing strategy.

REFERENCES:

- COGCC Rules and Regulations <http://oil-gas.state.co.us/>
- BLM and Forest Service “Gold Book” Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development <http://www.blm.gov/bmp/goldbook.htm>
- Low-Volume Roads Engineering Best Management Practices Field Guide [http://ntl.bts.gov/lib/24000/24600/24650/Index\\_BMP\\_Field\\_Guide.htm](http://ntl.bts.gov/lib/24000/24600/24650/Index_BMP_Field_Guide.htm)BLM
- Western Governors Association Coal Bed Methane Best Management Practices Handbook ([http://www.westgov.org/wga\\_reports.htm](http://www.westgov.org/wga_reports.htm))
- EPA’s National Menu of Stormwater Best Management Practices <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>
- EPA’s Storm Water Pollution Prevention Plans for Construction Activities <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>
- Weed control guidance <http://www.blm.gov/weeds/PullingTogether/PullingTogether.pdf>.
- CDOW Strategic Plan <http://wildlife.state.co.us/About/StrategicPlan/>
- Colorado Weed Management Association <http://www.cwma.org/>
- CDOW fencing standards guidance
- COGCC wildlife policy
- CDOW main (303) 297-1192
- COGCC main (303) 894-210

## **Appendix D: Explanation of the 1976 Lek Counts and Numbers Used**

### **Explanation of the 1976 Lek Counts and the Numbers Used**

John Toolen, December 2007

The most extensive and complete lek count information for the Piceance Creek area prior to the turn of the century is contained in the report "Survey of sage grouse strutting ground complexes and seasonal use areas within the Piceance Basin Wildlife Habitat Area, Progress Report, 12/20/1977, Colorado Division of Wildlife," widely known within the CDOW as "the Krager Sikes Act report."

The report's lek count information, while more extensive and complete than most data prior to 2000, has its own set of gaps and peculiarities, and I wanted to document the various constraints and limitations of this information as well as explain how I dealt with these issues in coming up with the numbers reported for the year 1976 used and cited in the conservation Plan. I wanted to use this information as a historical reference point, if only for the purpose of being able to state whether or not we think that we are counting more or fewer grouse in the area today than we did in the past.

#### **Peculiarities of 1975-1977 data:**

- Actual number of birds counted was not reported; rather, the number of birds counted at each lek was reported as being within a "range." The ranges were set at 1-2, 3-5, 6-15, and 15+ (which more logically could be called 16+). This presents difficulties in comparing data from these years to other years when actual counts were reported. One can take the mid-point of each range and report it, but how do you deal with "15+"? The text in the report does state that all leks were small, "less than 25 birds."
- The report does specifically state that the counts were of males or all birds present, though it does report that cock attendance at 84 Mesa decreased from 5 in 1971 to 1 in 1974.
- Counts were not conducted at the 28 leks reported in each year; rather, 3 leks were counted in 1975, 20 in 1976, and 5 in 1977.
- There was no overlap of counts among years, with the possible exception of 84 Mesa, which was reported as "last sighting, 1974."
- It is not stated or noted definitively when the 84 Mesa lek was visited during the 3-year period, or whether or not it was visited in all of the 3 years.
- No lek other than 84 Mesa was reported as having "zero" birds during 1975-1977. We do not know if that means that other leks were visited and not recorded if birds were absent, or if no other leks were visited.
- Other data was available for other leks not counted by Krager's crew.

## What I Did With the Data and Why

- I assumed the numbers reported were males, based on reference to 84 Mesa in text of report and statement quoted in next bullet point.
- I used 24 birds as the maximum number of males seen at a lek, based on the statement in the text that “the leks discovered were small (less than 25 strutting cocks)...” The highest whole number less than 25 is, of course, 24.
- I set up a spreadsheet with three columns for each year: minimum, middle and maximum. I put in numbers the following way: **Range 1-2:** 1, 2, 2. **Range 3-5:** 3, 4, 5. **Range 6-15:** 6, 11, and 15. **Range 15+ (16-24):** 16, 20, 24.
- I also included data from other count sources as available from eight other leks. Three of these leks overlapped in non-count years with 3 of the 28 leks in the Krager report. I included available data from other areas in order to make the closest comparison with current numbers which cover leks not included in the Krager report. These numbers are reported in the spreadsheet as the same number for each category of “minimum, middle, and maximum” (e.g., 4,4,4).

## Results

- I disregarded the numbers from 1975 and 1977. Full counts were not done in those years by Krager’s crew (3 leks in ’75 and 5 in ’77); unfortunately, leks counted in those years were not counted in 1976. One could conceivably lump those counts with the 1976 counts, but year-to-year variability can be high, and I decided no to do this.
- The minimum, middle, and maximum numbers reported for 1976 are 204, 284, and 350 males, respectively. What this means is that the only “real” number that can be stated as fact is 204. We know that there were at least 204 males on observed leks in the area because they were actually seen. The numbers for middle and maximum are more speculative. The high number of 350 could conceivably be higher; there is no way to know if all the birds present were actually seen. On the other hand, the way the data were presented, we can’t really assume that the maximum numbers of birds in each range were seen, although it is “possible,” if improbable, that 350 birds were seen and additional birds went undetected.

We can say for certain that 204 birds were seen on 28 different leks in the spring of 1976. This number is probably lower than the number of birds actually there, but because of the peculiarities of the number reports, we will never know for sure. So I decided to add, somewhat conservatively and arbitrarily, to add 30 males to the count by Krager. This number (234) is carried forward into the conservation Plan as the “official” number of males reported in 1976.

## **Appendix E: CDOW Lek Definitions and PPR Lek Location Map**

### **Abstract**

This dataset was created by the Colorado Division of Wildlife for the Colorado Greater Sage Grouse Conservation Plan (CCP). The dataset was created by merging individual population lek data received from various CDOW Wildlife Conservation and Terrestrial biologists.

The following defines the CCP Status field:

- Active lek: A display area that has been attended by  $\geq 2$  male sage-grouse in  $\geq 2$  of the previous 5 years.
- Inactive lek: A display area that has not been utilized (no male sage-grouse) for display or breeding in the last 5 years.
- Historic lek: A display area that has not been utilized for display or breeding in the last 10 years.
- Potentially active lek: A lek for which there is insufficient information to accurately categorize into active, inactive, or historic. Additionally, leks with male sage-grouse displaying or breeding in the last 5 years but does not meet activity status ( $\geq 2$  birds for  $\geq 2$  years of the last 5 years) are considered “potentially active”. This definition is similar to the “unknown” category used in the Colorado Conservation Plan (CCP) and CDOW Species Activity Maps. The name has been changed for this Plan to make a distinction between leks in this population, for which we are gathering information annually, versus leks in other areas (particularly the larger populations in Moffat and Jackson counties) where many lek sites are not always annually due to the number of leks and the time it would take to get to all of them each spring.

All data is the best available. Inconsistencies and errors may be present. Some leks were not mapped because of wrong or missing location information. This data shall not be redistributed without the consent of the Colorado Division of Wildlife.



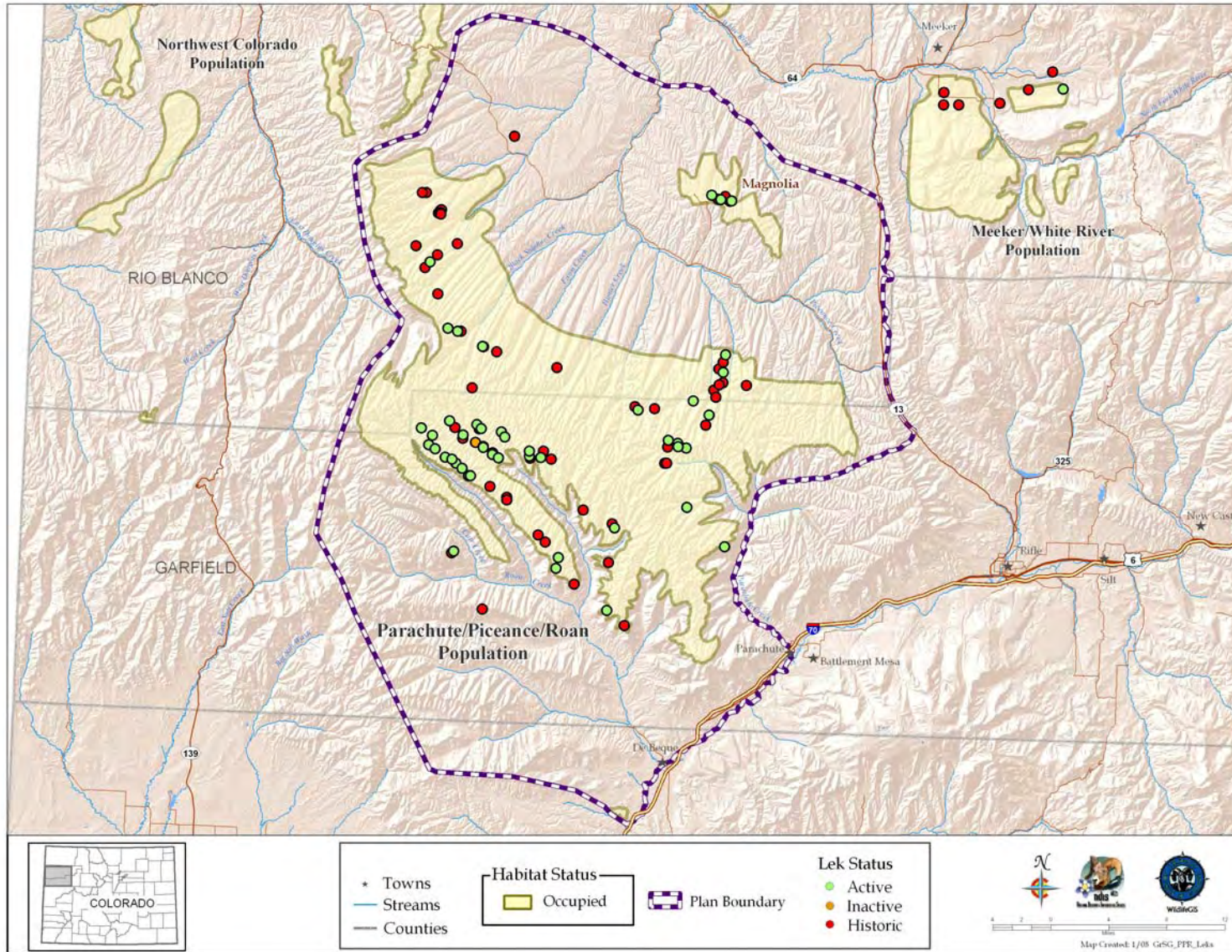


Figure F-1. PPR Lek Locations as of 2007



## **Appendix F: PPR Greater Sage-Grouse Habitat Mapping Summary**

### **PPR Greater Sage-Grouse Habitat Mapping Summary**

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#### **Purpose and Need**

In order to develop landscape-scale conservation strategies specific to the PPR, the BLM (White River Field Office) initiated a 3 year, landscape-level greater sage-grouse habitat inventory for the Piceance Basin in the summer of 2006. The PPR population is unique because the available habitat is naturally fragmented due to topography and because sagebrush parks are often interspersed with mountain shrubs. The habitat inventory is being conducted on both public and private land and will provide critical local information on the quantity and quality of available sage-grouse habitat in the PPR at a scale not possible from state or national mapping efforts. Specifically, the habitat inventory will provide: 1) a biologically-based estimate for the number of acres of sage-grouse habitat in the Piceance Basin, 2) the spatial arrangement of suitable habitat and unsuitable habitat, and 3) the quality of available habitat (i.e. herbaceous understory, encroachment from pinyon/juniper, etc).

The primary objective of the Piceance Basin sage-grouse habitat inventory is to create a relatively simple landscape-scale map of the different vegetation types found within potential sage-grouse habitat. Since the map is GIS-based, it can easily be shared, updated, and overlaid with other landscape features such as leks, roads, well pads, etc. We plan to use the habitat inventory map as a means to: 1) determine the suitability of specific areas as potential sage-grouse habitat, 2) prioritize areas in need of habitat restoration, and 3) evaluate land uses that may impact either suitable habitat or restoration efforts.

#### **Computer Model of Potential Habitat**

We began by developing a computer model of potential sage-grouse habitat within the overall range established by the CDOW for the PPR population. We identified potential sage-grouse habitat using a GIS (geographic information system) model based on slope and vegetation type. We used the Colorado Vegetation Classification Project (CVCP) data and included 19 vegetation classes that included grasses, forbs, sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus* spp.), and mountain shrubs. We did not include drainages and used a 75m buffer around drainages to remove them from the model. Slope was generated from a DEM (digital elevation model) and was originally limited to 15% or less. Not including the Magnolia area, the computer model estimated 38,613 acres of potential sage-grouse habitat (including both public lands and private property) for the PPR population.

While the computer model is soundly based on habitat requirements, we have always considered it a work in progress and we have been updating our estimate of potential habitat as we gain more local information. In some areas, the model overestimates habitat by including habitat types that are not suitable sage-grouse habitat such as aspen, oak/serviceberry, and pinyon/juniper. In other areas, the model underestimates habitat by not including the basins at the

tops of drainages. In response to the observation of sage-grouse using areas outside of the modeled habitat, we ran the model again using a 20% slope cut-off instead of the original 15% slope cut-off. Using the 20% slope model, we estimated 55,170 acres of potential sage-grouse habitat (Figure F-1).

### Habitat Inventory Map

The next step was to ground-truth the vegetation types within the computer model. We went to areas identified by the computer model as potential habitat and classified them into general habitat categories based on the vegetation type present at the site: oak/serviceberry (OS), aspen (AS), pinyon/juniper (PJ), grass (GR), rabbitbrush (RB), mountain shrub (MT), and sagebrush (SG). We designated mountain shrub sites as those sites where  $\geq 25\%$  of the shrub cover (excluding rabbitbrush) at the site was composed of bitterbrush, serviceberry, and/or snowberry. At representative sites, we used 30m line transects to measure vegetation. Shrub cover was estimated using the line intercept method, forb and grass cover was estimated using the Daubenmire method, and visual obstruction was estimated using a Robel pole.

Approximately 9,885 acres and 29,205 acres were mapped during the 2006 and 2007 field seasons, respectively (Figure F-2). In addition to the 204 vegetation transects, there are an additional 177 photo points. Herbaceous understory and shrub composition information was collected at representative rabbitbrush sites ( $n=3$ ), mountain shrub sites ( $n=111$ ), and sagebrush sites ( $n=90$ ). There was no significant difference in herbaceous cover between mountain shrub and sagebrush sites. The most obvious difference between the two types of sites is simply the composition of shrubs at the site. Research from the Colorado Division of Wildlife on habitat use by radio-collared PPR birds will help resolve whether or not mountain shrub is important sage-grouse habitat. Since we record shrub cover by species, we will be able to go back and look at this data again as research progresses and will be able to identify sites that are an equal mixture of several shrub species (e.g. bitterbrush, snowberry, serviceberry, rabbitbrush, sagebrush, serviceberry) or sites that are dominated by only a few species (e.g. sagebrush and serviceberry).

One of the primary products of the sage-grouse habitat inventory is the habitat type map. The map is GIS-based and can be overlaid with other shapefiles to see the spatial arrangement of habitat types in relation to other landscape features such as leks, roads, etc. Since it covers such a large area, it is difficult to show habitat types for the entire inventoried area on a small map. Figure G-3 shows a portion of the habitat inventory map for an area west of the Sprague Gulch Road and Divide Road junction. While the map shows mountain shrub sites and sagebrush sites as discrete units, it is important to remember that in reality there is a gradient between them. In some areas, the habitat inventory closely follows the modeled habitat but in other areas we have mapped acreage outside of the model. The map shows the spatial arrangement of the habitat types but it does not show areas in need of habitat restoration. We found it difficult to map encroachment and habitat quality and instead use the site photos and transect data to convey that information.

### A Work in Progress

It can not be overemphasized that our estimate of potential habitat is only an initial estimate and that it is subject to revision as we gain more local knowledge. We are trying to use our habitat inventory together with the computer models to estimate potential habitat. It is critical that we also consider how well those methods match the areas that the birds are actually using. We plan to work closely with CDOW to determine how well our model of potential habitat and

the habitat inventory map matches their location data from radio-collared birds and to make adjustments as necessary.

While this data is preliminary and incomplete, it is already proving valuable. We are using this information to improve our estimate of the acreage of sage-grouse habitat. We have also used this information to identify several potential areas for habitat restoration work based on dense shrub cover, low understory cover, tall serviceberry shrubs, or the encroachment of pinyon/juniper. Our goal over the 2008 summer field seasons is to complete the PPR habitat inventory for all sage-grouse habitat within the White River Resource Area. To do so, it is critical that we continue our existing partnerships with private landowners and establish new partnerships.

### Partners

As mentioned above, the habitat inventory is being conducted on both public and private land. We are grateful to the following landowners for allowing us permission to use their land to access public land and/or to conduct the habitat inventory on their land: Jim Brennan, ConocoPhillips, J. Lynn Dougan, EnCana, ExxonMobil, Torrence Hughes, Dan Johnson, Pat Johnson, Tim Mantle, Jerry Oldland, Orion Energy Partners, Shell, and Tim Uphoff.

We would also like to thank EnCana for providing \$34,000 to help fund this project in 2006 and 2007. In 2007, CDOW provided one technician and also provided housing for another technician at the Little Hills bunkhouse.

We hope to continue these partnerships in the future and to develop new partnerships with other landowners in the Piceance Basin.

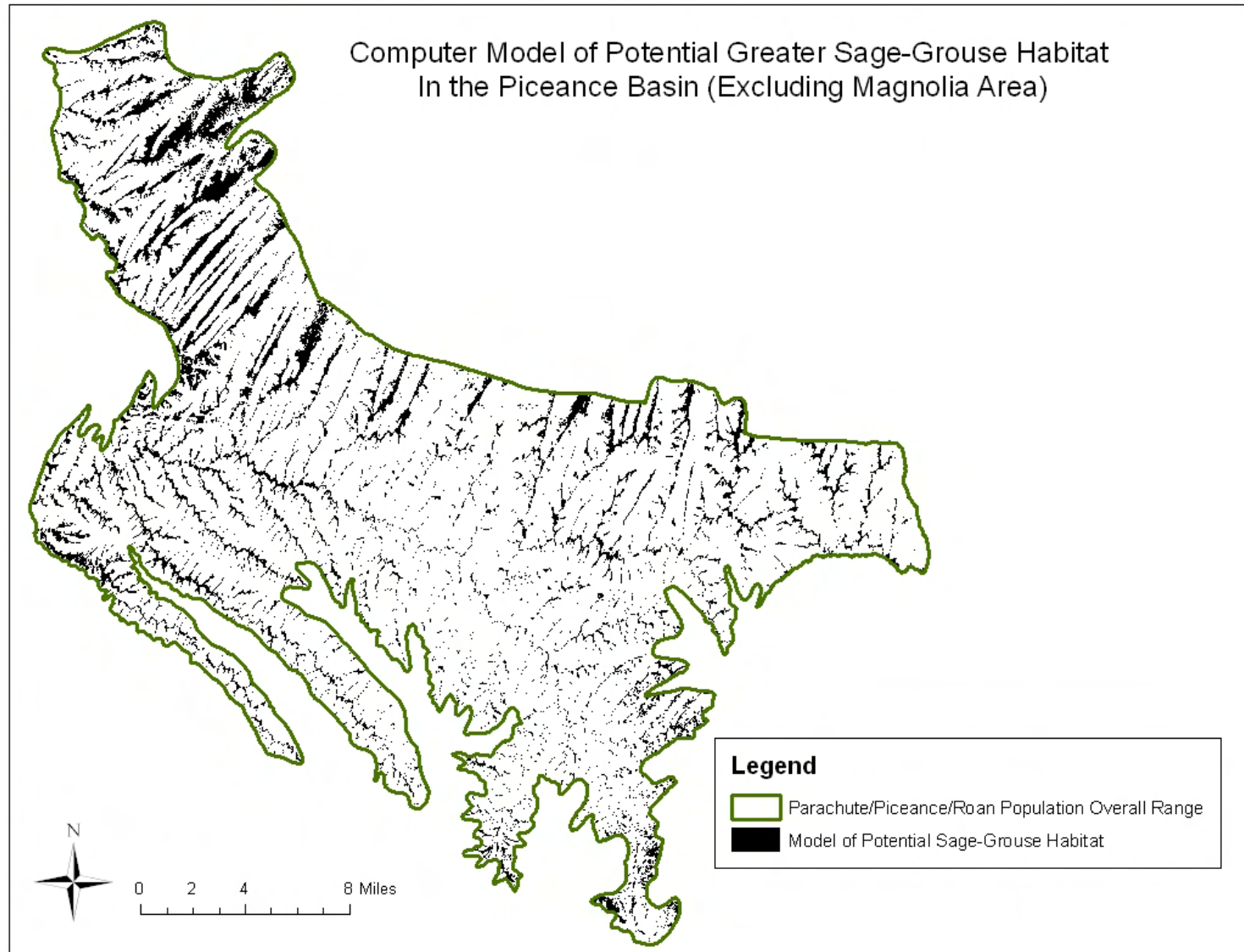


Figure F-1. Computer Model of Potential Greater Sage-Grouse Habitat in the Piceance Basin (Excluding the Magnolia Area)



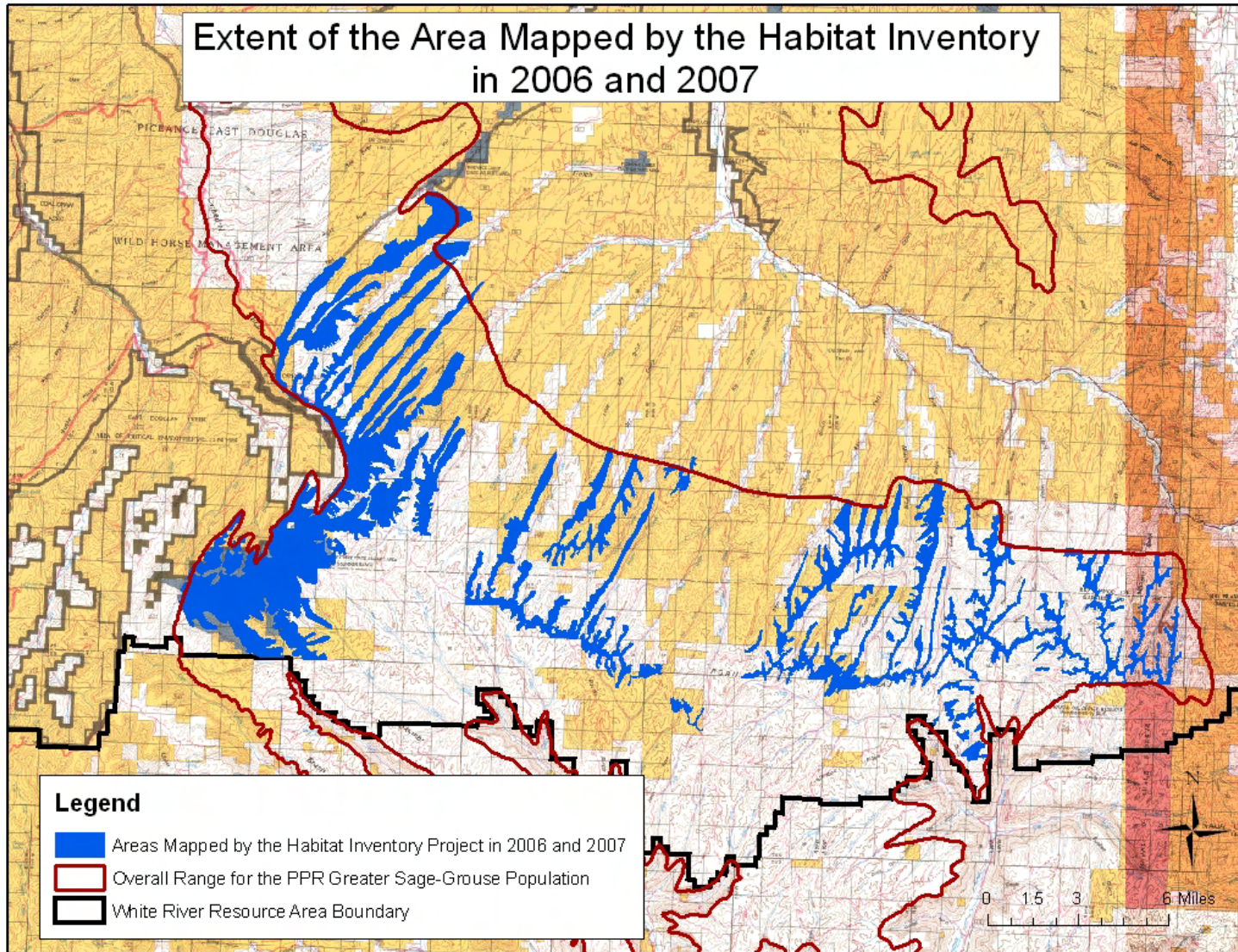
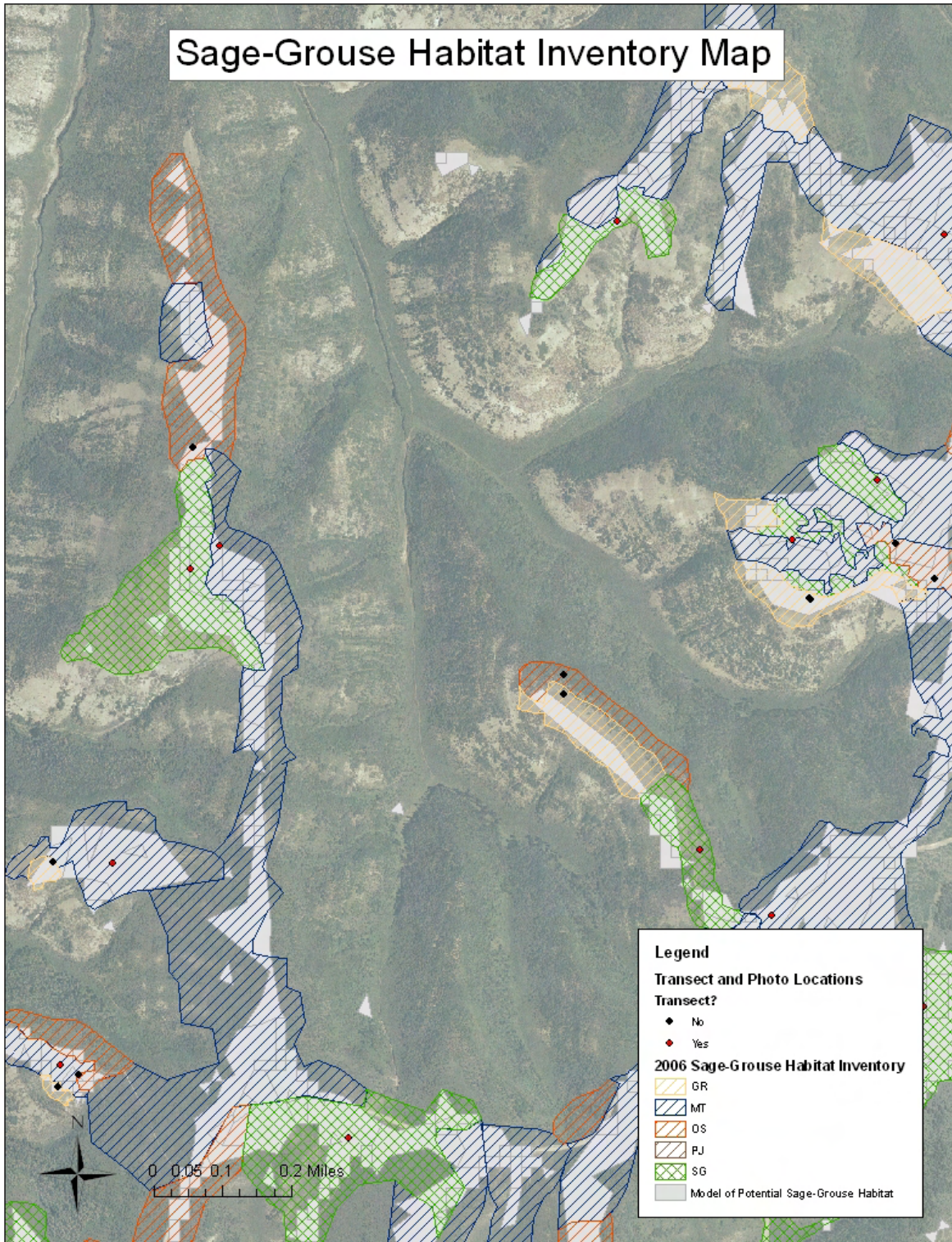


Figure F-2. Areas mapped for sage-grouse habitat inventory during the 2006 and 2007 field seasons.





**Figure F-3. An example of the sage-grouse habitat inventory map for an area west of the Sprague Gulch Road and Divide Road junction. (GR=grass, MT=mountain shrub, OS=oak/serviceberry, PJ =pinyon/juniper, SG=sagebrush)**

## Appendix G: USFWS “Proposed Policy for Evaluating Conservation Efforts When Making Listing Decisions

U.S. Fish & Wildlife Service / National Oceanic & Atmospheric Administration

### Proposed Policy for of Conservation Efforts When Making Listing Decisions

On June 13, 2000, the Fish and Wildlife Service and the National Marine Fisheries Service (Services), published a draft policy for the evaluation of conservation efforts when making listing decisions under the Endangered Species (Act). While the Act requires us to consider all conservation efforts being made to protect a species, the policy identifies criteria we will use in determining whether formalized conservation efforts contribute to making listing a species as threatened or endangered unnecessary. The policy applies to conservation efforts identified in conservation agreements, conservation plans, management plans or similar documents developed by Federal agencies, State and local governments, Tribal governments, foreign governments, businesses, organizations, and individuals.

#### **What is the purpose of this policy?**

We have proposed this policy in order to ensure consistent and adequate evaluation of formalized conservation efforts (conservation efforts identified in conservation agreements, conservation plans, management plans, and similar documents) when making listing decisions. We have also proposed this policy to facilitate the development of conservation efforts that sufficiently improve a species’ status so as to make listing the species as threatened or endangered unnecessary.

#### **Does the policy specify the level of conservation, or types of conservation, needed to make listing unnecessary?**

No, the policy does not provide guidance for determining the level of conservation or the types of conservation efforts needed to make listing unnecessary. Also, the policy does not provide guidance for determining when parties should enter into agreements or when a conservation effort should be included in an agreement or plan. *The policy provides guidance only for evaluating the certainty of implementation and effectiveness of formalized conservation efforts.*

#### **What authority does the Service have to implement this policy?**

Section 4(a)(1) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1533(a)(1)) states that we must determine whether a species is threatened or endangered because of any of the following five factors:

- (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) overutilization for commercial, recreational, scientific, or educational purposes;
- (C) disease or predation;
- (D) the inadequacy of existing regulatory mechanisms; and



(E) other natural or manmade factors affecting its continued existence.

Although this language focuses on impacts negatively affecting a species, section 4(b)(1)(A) requires us also to “tak[e] into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction, or on the high seas.” Read together, sections 4(a)(1) and 4(b)(1)(A) and our regulations at 50 C.F.R. section 424.11(f) require us to consider any State, local, or foreign laws, regulations, ordinances, programs, or other specific conservation measures that either positively or negatively affect a species’ status. The manner in which the section 4(a)(1) factors are framed supports this conclusion. Factor (D) for example— “the inadequacy of existing regulatory mechanisms”—indicates that we might find existing regulatory mechanisms adequate to justify a determination not to list a species.

In addition, we construe the analysis required under section 4(a)(1), in conjunction with the directive in section 4(b)(1)(A), to authorize and require us to consider whether the actions of any other entity, in addition to actions of State or foreign government, create, exacerbate, reduce, or remove threats to the species. Factor (E) in particular—any “manmade factors affecting [the species’] continued existence”—requires us to consider the pertinent laws, regulations, programs, and other specific actions of any entity that either positively or negatively affect the species. Thus, the analysis outlined in section 4 requires us to consider any conservation efforts by State or local governments, foreign governments, Tribal governments, Federal agencies, businesses, organizations, or individuals that positively affect the species’ status.

**What are the criteria that a conservation effort must meet in order for the Service to determine that it might contribute to making listing unnecessary?**

Conservation agreements, conservation plans, management plans, and similar documents generally identify numerous conservation efforts (i.e., actions, activities, or programs) to benefit the species. In determining whether a formalized conservation effort contributes to making listing a species as threatened or endangered unnecessary or contributes to forming a basis for listing as threatened rather than endangered, we must evaluate whether the conservation effort affects the status of the species.

Two factors are key in that evaluation: (1) For those efforts yet to be implemented, the certainty that the conservation effort will be *implemented* and (2) the certainty that the conservation effort will be *effective*. In order for us to determine that a formalized conservation effort contributes to making listing a species unnecessary or contributes to forming a basis for listing a species as threatened rather than endangered, the conservation effort must meet the following criteria:

*A. The certainty that the conservation effort will be implemented:*

- The conservation effort; the party(ies) to the agreement or plan that will implement the effort; and the staffing, funding level, funding source, and other resources necessary to implement the effort are identified.
- The authority of the party(ies) to the agreement or plan to implement the conservation effort, and the legal procedural requirements necessary to implement the effort, are described.



- Authorizations (e.g., permits, landowner permission) necessary to implement the conservation effort are identified, and a high level of certainty that the party(ies) to the agreement or plan that will implement the effort will obtain these authorizations is provided.
- The level of voluntary participation (e.g., by private landowners) necessary to implement the conservation effort is identified, and a high level of certainty that the party(ies) to the agreement or plan that will implement the conservation effort will obtain that level of voluntary participation is provided (e.g., an explanation of why incentives to be provided are expected to result in the necessary level of voluntary participation).
- All regulatory mechanisms (e.g., laws, regulations, ordinances) necessary to implement the conservation effort are in place.
- A high level of certainty that the party(ies) to the agreement or plan that will implement the conservation effort will obtain the necessary funding is provided.
- An implementation schedule (including completion dates) for the conservation effort is provided.
- The conservation agreement or plan that includes the conservation effort is approved by all parties to the agreement or plan.

*B. The certainty that the conservation effort will be effective:*

- The nature and extent of threats being addressed by the conservation effort are described.
- Explicit objectives for the conservation effort and dates for achieving them are stated.
- The steps necessary to implement the conservation effort are identified.
- Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured, are identified.
- Provisions for monitoring and reporting progress in implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided.
- Principles of adaptive management are incorporated.

Based on input received during the public comment period, these criteria may be revised in the final policy.

**Whom should I contact about this policy?**

To obtain further information on the proposed policy, contact our Headquarters Office at the address below. More information and office addresses can also be found by visiting the Fish & Wildlife Service website: (<http://www.fws.gov>).

U.S. Fish and Wildlife Service  
Endangered Species Program  
4401 N. Fairfax Drive, Room 420  
Arlington, VA 22203  
703/358 2105

National Marine Fisheries Service  
Office of Protected Resources  
Room 13658  
1315 East West Highway  
Silver Spring, MD 20910  
301/713 1401

September 2001

## Appendix H: List of PPR Workgroup Members

First Name	Last Name	Affiliation
Fran	Amendola	Norwest Corporation
Vic	Beckler	
Drew	Bennett	Mesa Land Trust
Paul	Betzer	ConocoPhillips Co.
Geoff	Blakeslee	The Nature Conservancy
Clait	Braun	Grouse Inc.
Bill & Nancy	Brennan	Landowner
John	Bridges	Western Area Power Administration
Indra	Briedis	
Nicole	Brynes	Encana
Rep. Bernie	Buescher	Colorado House of Reps.
Chris	Canfield	COGCC
Dave	Cesark	Williams Production RMT
Chris	Clark	Plains Exploration and Production Co.
Creed	Clayton	USFWS
Ray	Clifton	Colorado Rural Electric Assoc.
Bob	Coleman	Marathon
Fred	Cummings	NRCS
Dennis	Davidson	NRCS
Eileen	Dey	Conoco-Phillips
Steve	Don	Grand Valley Rural Power Lines Inc.
Scot	Donato	Bill Barrett Corp
Stephanie	Duckett	Colorado Division of Wildlife
Bill	Ekstrom	CSU Cooperative Ext.
Darby	Finley	Colorado Division of Wildlife
Maurice	Foye	HRL Compliance
Chris	Freeman	Berry Petroleum
Kathy	Friesen	EnCana
John	Gardner	Rifle Citizen-Telegram
Paul T.	Gayer	Kinder Morgan
Terry	Gosney	EnCana
John	Gray	Westwater Engineering
Carrie	Gudorf	Cordillean
Joe	Gumber	Westwater Engineering
Adell	Heneghan	Marathon Oil Company
Geoff	Hier	CO Rural Elect. Assoc.
Ed	Hollowed	BLM
Joel	Hurmance	EDM Consultants
Terry	Ireland	USFWS
Tyson	Johnston	PDC - Petro Development Corp.
Kim	Kaal	CO Div. of Wildlife

Andy	Keep	NRCS
Tom	Knowles	CDOW
Elissa	Knox	CO Div. of Wildlife
Pete	Kolbenschlag	Colorado Environmental Coalition
Nicole	Korbe	Tri-State Generation & Transmission Assoc.
Frank	Krugh	Marathon Oil
Mike	Lopez	Land Manager
Justin	Lovato	Conoco Phillips
Jeff	Madison	Rio Blanco County
Noe	Marymor	CDOW / NRCS
Dan	Mathews	CO Div. Reclamation Mining & Safety
Pat	McCarty	CSU Cooperative Ext.
Larry	McCown	Garfield County Commissioner
Dave	McDonald	Landowner
Mike	McKibbin	Grand Junction Daily Sentinel
Mike	McKibbin	Rifle Citizen Telegram
Brandon	Miller	CDOW
Cathy	Neelan	North American Mediation Associates
Forrest	Nelson	Rio Blanco County Commissioner
David	Neslin	Colorado Oil & Gas Commission
Joe	Neuhof	Colorado Environmental Coalition
Lori	Nielsen	EDM Consultants
Big Eddie	Nielson	NRCS
Sean	Norris	Chevron
Jerry & Stephanie	Oldland	Landowner
John	O'Rourke	Earth Tech.
Lee	Parker	Chevron Shale Oil Co.
Brad	Petch	Colorado Division of Wildlife
Al	Pfister	W. Colorado Field Office, USFWS
Evan	Phillips	CDOW
Heidi	Plank	Bureau of Land Management
Kent	Rider	Williams
Larry	Robinson	Landowner
Albert	Romero	Colorado Division of Wildlife
Pam	Roth	Williams Energy
Heather	Sauls	BLM
John	Savage	Landowner
Terri	Schulz	The Nature Conservancy
Clee	Sealing	North American Grouse Partnership
Steve	Shuey	CDRMS
Steve	Smith	The Wilderness Society
Brett	Smithers	Bureau of Land Management
Ron	Spencer	White River Electric Assn.
Ken	Strom	Audubon Colorado
Mike	Swaro	CDOW
Jim	Thate	Colorado Rural Electric Assoc.

Dan	Thompson	NRCS
Bob	Timberman	USFWS
John	Toolen	Colorado Division of Wildlife
Tim & Chris	Uphoff	Landowner
Boone	Vaughn	Landowner
Deanna	Walker	Conoco-Phillips
Kent	Walter	Bureau of Land Management
Chuck	Whiteman	Shell Oil