

SMITH CREEK RANCH LTD

Candidate Conservation  
Agreement with Assurances

Greater Sage-grouse (*Centrocercus urophasianus*)

An Agreement between

Smith Creek Ranch LTD, Nevada

and the

U.S. Fish and Wildlife Service

Reno, Nevada

February 20, 2015

FINAL DRAFT

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## **Introduction**

On March 23, 2010, the U.S. Fish and Wildlife Service (Service) published a rangewide “warranted but precluded” finding for the greater sage-grouse (*Centrocercus urophasianus*) (75 FR 13909). This finding indicated that the greater sage-grouse needs protection under the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 *et seq.*), but higher priority species precluded moving forward with a listing rule. Thus, the greater sage-grouse has been given candidate status. The primary threats to the greater sage-grouse, as determined in the 2010 finding, are habitat loss, fragmentation, and degradation.

This Candidate Conservation Agreement with Assurances (CCAA) is an agreement between Smith Creek Ranch LTD and the Service to benefit the greater sage-grouse on private lands on Smith Creek Ranch located in Churchill and Lander Counties, Nevada. This CCAA becomes effective and binding on the date of the last signature below.

A CCAA is a voluntary agreement whereby landowners agree to manage their lands to remove or reduce threats to species which may become listed under the ESA. In return for managing their lands to benefit the species, landowners receive assurances against additional regulatory requirements should the species be listed under the ESA. The landowners also agree to allow access to monitor the effectiveness of the implemented conservation measures. Under a CCAA, the Service will issue enrolled landowners Enhancement of Survival permits pursuant to section 10(a)(1)(A) of the ESA. Since the agreement is voluntary, the landowners can cancel it at any point; however, in doing so they lose any assurances, and the permit would be terminated.

## **Authorities and Purpose**

Sections 2, 7, and 10 of the ESA allow the Service to enter into this CCAA. Section 2 states that encouraging parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation’s heritage of fish, wildlife, and plants. Section 7 requires the Service to review programs that they administer and to utilize such programs in furtherance of the purposes of the ESA. Section 10 describes permits issued under the ESA, exempting certain prohibitions under section 9.

The purposes of the ESA are “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved,” and “to provide a program for the conservation of such endangered species and threatened species...” “Conserve” is defined in section 3(3) of the ESA and means “to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary.” Section 10(a)(1)(A) of the ESA authorizes the issuance of permits to “enhance the survival” of a listed species. However, Enhancement of Survival permits are not issued for candidate or other non-listed species unless and until those species are listed as threatened or endangered. By entering into this CCAA, the Service is utilizing its Candidate Conservation Program to further the conservation of the Nation’s wildlife.

Under this CCAA, the owner of Smith Creek Ranch LTD (applicant) will hold an ESA Section 10(a)(1)(A) Enhancement of Survival permit issued by the Service which will become active if

the species is listed. The Service will assist by providing oversight and technical assistance. The goal of this CCAA is to implement conservation measures for the greater sage-grouse on private lands at Smith Creek Ranch, located in Churchill and Lander Counties, Nevada, to encourage enhancement and protection of existing and suitable greater sage-grouse habitat. This goal will be met by giving Smith Creek Ranch LTD incentive to implement conservation measures to address threats to the species and by providing this private landowner with regulatory certainty concerning land use restrictions that might otherwise apply should the greater sage-grouse become listed under the ESA.

This CCAA is a plan covering Smith Creek Ranch LTD's enrolled lands identified below and is intended to identify party obligations. Consistent with the CCAA, Smith Creek Ranch LTD will be issued a section 10(a)(1)(A) permit by the Service upon approval of the CCAA. Smith Creek Ranch LTD's permit will authorize incidental take of greater sage-grouse, should it occur, as long as the permit conditions, including implementation of the CCAA, are followed. This CCAA is consistent with the Service's Candidate Conservation Agreement with Assurances Final Policy (64 FR 32706; June 17, 1999) and the regulations implementing the policy (69 FR 24084; May 3, 2004). The permit would include ESA regulatory assurances set forth at 50 CFR §§ 17.22(d)(5).

This CCAA was designed to meet the criteria of a conservation agreement as specified in the Service's Policy for the Evaluation of Conservation Efforts (PECE; 68 FR 15100; March 3, 2003). These criteria are intended to ensure that the conservation measures will be implemented and that the implemented conservation measures will be effective. To ensure PECE compliance, the Service Nevada Fish and Wildlife Office prepared the CCAA; drafts of the CCAA were also reviewed by the Service's Pacific Southwest Region. Appendix A lists PECE criteria and where they are addressed in the CCAA.

## **Background**

Prior to settlement of western North America by European immigrants, the greater sage-grouse was found in portions of 13 States and 3 Canadian Provinces (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, North Dakota, South Dakota, Nebraska, Arizona, British Columbia, Alberta, and Saskatchewan). Currently, this species occurs in portions of 11 States and 2 Canadian Provinces (now absent from Arizona, Nebraska, and British Columbia) (75 FR 13909). For a complete description of the natural history, status, distribution, and threats for the greater sage-grouse, please see 75 FR 13909. Between 1999 and 2003, the Service received eight petitions to list various populations of the greater sage-grouse under the ESA. Most recently (March 23, 2010), the Service published a rangewide "warranted but precluded" finding (75 FR 13909). This finding, as mentioned above, indicated that the greater sage-grouse needs ESA protection, but higher priority species precluded moving forward with a listing rule at that time. Thus, the greater sage-grouse is currently a candidate species. The primary threats to the greater sage-grouse, as determined in the 2010 finding, are habitat loss, fragmentation, and degradation.

Production of livestock is the primary use of Smith Creek Ranch LTD lands and contributes to the funding for greater sage-grouse habitat enhancement projects conducted on the property.

Listing the greater sage-grouse could impact this use. While some livestock management techniques may be detrimental to greater sage-grouse and their habitat (see below), livestock grazing was not a primary contributor to the Service's "warranted but precluded" finding (75 FR 13909). The Service determined that grazing was not the actual threat, but that it was some aspects of livestock management and the potential impacts it may have on greater sage-grouse habitat fragmentation, degradation, and loss. Livestock management may have both positive and negative impacts on greater sage-grouse and their habitat depending on the management techniques employed. Some benefits of livestock management may include: (1) Maintenance of large tracts of undeveloped and unfragmented land; (2) increased rangeland plant diversity, including perennial grasses and forbs; (3) weed and invasive species management; and (4) productive springs and seeps. Some negative impacts of livestock management may include: (1) Compacting soils and increasing bare ground, thereby increasing the risk of establishing invasive weeds; (2) installation of water developments degrading nesting and brood-rearing habitat or increasing the risk of West Nile virus (mosquito vector); (3) sagebrush removal to increase forage for livestock, resulting in loss of greater sage-grouse habitat; (4) over-grazing, decreasing beneficial grasses and forbs in nesting and brood-rearing habitat; and (5) installation of fences causing direct mortality to greater sage-grouse and increasing habitat fragmentation.

Ranchers can address the compatibility of livestock and greater sage-grouse management through various practices which reduce habitat loss, fragmentation, and degradation. Development of CCAAs can provide assurances to ranch owners for livestock operations in return for greater sage-grouse conservation activities on their private lands.

The phrase "preclude or remove any need to list" is based upon the removal of threats and the stabilization or improvement of the status of the species. The decision to list a species under the ESA is a regulatory process independent of a CCAA. The Service will evaluate actions and successes of this CCAA in accordance with the Service's PECE during the listing determination process, as required under section 4(b)(2)(A) of the ESA. The Service will consider the contribution of conservation efforts made by these types of agreements in the "five-factor analysis" used to make a listing determination.

### **Description of the Area and Enrolled Lands**

Smith Creek Ranch is located about 40 miles west of Austin and 90 miles east of Fallon, Nevada. Elevation on Smith Creek Ranch is from about 6,100 feet to 6,800 feet (Smith Creek Ranch LTD and NRCS 2010). Elevation in the Edwards Creek area ranges from 5,500 feet to 6,000 feet (Smith Creek Ranch LTD and NRCS 2010). The average annual precipitation is 6–14 inches (Smith Creek Ranch LTD and NRCS 2010). Smith Creek Ranch LTD's lands occur on both the west and east sides of the Desatoya Mountains.

Smith Creek Ranch LTD is a commercial cow/calf operation that produces weaner calves. Forage is provided for about 850 head of cattle (Angus and Angus cross pairs, heifers, and bulls) year-long from a combination of private and public lands. Cattle numbers on the ranch vary depending on rangeland forage conditions, water availability, and market conditions. Much of the cattle grazing occurs on public lands (Edwards Creek, Carson, and Porter Canyon Allotments administered by the Bureau of Land Management (BLM) Carson City District Office) year round

using a deferred rotation grazing system with two summer and two winter use areas (BLM *in litt.* 2005; Smith Creek Ranch LTD and NRCS 2010). Cattle are moved seasonally among spring, summer, fall, and winter use areas in a rotation. Most calves are born from April to September. Most calves are weaned in the fall and are fed ranch-produced hay in the winter. In addition, approximately 30 saddle horses are maintained on the ranch utilizing grazing areas during the grazing season and fed near the ranch headquarters during other times of the year. The private lands are used to produce hay and provide forage during livestock moves (gathering and holding fields) for weaned calves and saddle horses, and occasionally for seasonal feed ground use. The ranch contains approximately 3,500 acres of private lands, of which between 1,300 and 1,500 are fenced (S. Lossing, Smith Creek Ranch LTD, *in litt.* 2013a).

During 2009–2010, Smith Creek Ranch LTD, with assistance from the NRCS, developed a Conservation Plan for the ranch’s private lands associated with its ranching operation in Lander and Churchill Counties (Smith Creek Ranch LTD and NRCS 2010). The objectives for the Conservation Plan include: (1) Improving forage production on fenced rangeland and on irrigated pastureland, and improving hay production on hayland while conserving soil, water, and natural resources; (2) providing habitat for greater sage-grouse and mule deer (*Odocoileus hemionus*) on private lands; and (3) providing recreational activities on portions of the ranch.

Several areas of private lands (Smith Creek, BB Unfenced HQ South, CC Unfenced HQ North, Billie Canyon, Upper Billie Canyon, Upper Edwards Creek, Lower Edwards Creek, Topia) remain unfenced and are managed as part of the three BLM Allotments mentioned above. The grazing plan for these unfenced private land portions is discussed in the Desatoya Ecosystem Management Plan (Management Plan; BLM 1999). The purpose of the Management Plan is “...to conserve, restore and maintain the ecological integrity, productivity and biological diversity of the Desatoya Ecosystem.” Grazing targets key riparian habitat “... to promote plant vigor, woody species recruitment and bank building...” and upland areas “...to maintain health, vigor and upward trend.” Livestock are managed to “...limit utilization on uplands to moderate (41–60 percent)...” with the desired result of “...numerous lightly used or unused areas, which provide attractive nesting habitat...” for greater sage-grouse. Livestock will be managed to “obtain growth/regrowth of 4 inches or more in key sage-grouse riparian and meadow habitat by the end of the grazing season.” The end of the grazing season generally occurs by October 15<sup>th</sup>.

About 90–150 acres of irrigated hayland is cut yearly for hay production. The hay is cut in early July, August, and on occasion in mid-September. Most hay production augments forage for brood cows and feed availability associated with public lands.

In addition, a minor portion of the ranch income is from recreational activities such as trophy trout fishing, limited fish sales from a small hatchery, and sales of excess hay. Occasionally, Smith Creek Ranch LTD hosts camping activities for scouting, religious, and civic organizations during the summer months.

The “enrolled lands” consist of 2,201 acres of Smith Creek Ranch LTD private lands in Churchill and Lander Counties, Nevada, and are those lands identified to provide conservation benefits for the greater sage-grouse (Table 1). Enrolled lands are areas of rangeland, pasture, and

hayland with some associated riparian areas. Appendix B provides the legal description for each field on Smith Creek Ranch LTD that is enrolled in this CCAA.

**Table 1. Fields, Land Use, Use Period, Livestock Type, and Acreage at Smith Creek Ranch, in Lander and Churchill Counties, Nevada. The enrolled acreage is derived from Smith Creek Ranch LTD and NRCS (2010) and Smith Creek Ranch LTD employees (D. Coombs, Smith Creek Ranch LTD, pers. comm. 2013a).**

<b>Lander County</b>				
<i>Field</i>	<i>Land Use</i>	<i>Use Period</i>	<i>Livestock Type</i>	<i>Acres</i>
Big Reservoir	Rangeland	Spring or Fall (gather)	Cow/calf	277
Fish Pond	Fishing/Pasture	Fall to Winter	Cow/calf	9 (with 6 ac pond)
Mares Pasture	Fishing/Pasture	Fall to Winter	Horses	3
Raising Pond	Pasture	Fall to Winter	Cow/calf	14
Leo's Pasture	Pasture	Spring to Summer	Horses	7
Horse Pasture	Pasture	Spring to Summer	Horses	34
Swamp	Hay/Pasture	Fall to Winter	Horses	26
Rock	Hay/Pasture	Fall/Winter	Cow/calf	27
South Rock	Hay/Pasture	Fall to Winter	Cow/calf	18
Derrick	Hay/Pasture	Fall to Winter	Cow/calf	25
Haystack	Hay/Pasture	Fall to Winter	Cow/calf	77
Lower Meadow	Hay/Pasture	Fall to Winter	Cow/calf	170
Brush	Pasture	Spring to Summer	Bulls/cow/calf	110
BB Unfenced HQ South	Rangeland/Unfenced with BLM	Fall and Spring	Cow/calf	204
CC Unfenced HQ North	Rangeland/Unfenced with BLM	Fall and Spring	Cow/calf	200
Smith Creek	Rangeland/Unfenced with BLM	Summer	Cow/calf	80
Billie Canyon	Rangeland/Unfenced with BLM	Summer	Cow/calf	40
Upper Billie Canyon	Rangeland/Unfenced with BLM	Summer	Cow/calf	40
Total Acres				1,361
<b>Churchill County</b>				
<i>Field</i>	<i>Land Use</i>	<i>Use Period</i>	<i>Livestock Type</i>	<i>Acres</i>
Lower Edwards Creek	Rangeland/Pasture/Unfenced	Spring or Fall (gather)	Cow/calf	80
Edwards Creek	Rangeland/Fenced	Spring or Fall (gather)	Cow/calf	480
Upper Edwards Creek	Rangeland/Unfenced with BLM	Summer	Cow/calf	160
Topia	Rangeland/Unfenced with BLM	Summer	Cow/calf	120
Total Acres				840
<b>Grand Total Acres</b>				<b>2,201</b>

## Existing Habitat Conditions

The following description of the existing habitat conditions on Smith Creek Ranch is from Smith Creek Ranch LTD and NRCS (2010). The pastureland fields (Fish Pond, Mares Pasture, Raising Pond, Leo's Pasture, Horse Pasture, Brush), in general, contain a mixture of native grasses such as *Leymus triticoides* (creeping wildrye) with pasture forage species such as *Medicago sativa* (alfalfa), *Trifolium repens* (white clover), *Lolium arundinaceum* (tall fescue), *Bromus inermis* (smooth brome), *Phleum pratense* (timothy), and *Poa* sp. (bluegrass). *Salix* sp. (willows), *Populus* sp. (aspen), *Rosa* sp. (wild rose), *Iris* sp. (wild iris), *Carex* sp. (sedges), and *Juncus* sp. (rushes) can be found along creeks and ditches and other wet areas in these fields. *Artemisia tridentata* ssp. *tridentata* (basin big sagebrush), *Chrysothamnus nauseosus* (rubber rabbitbrush), and *Sarcobatus vermiculatus* (greasewood) also occur in areas. The Fish Pond Field has a 6-acre pond in the middle, and Raising Pond Field contains a large marsh with predominantly *Carex nebrascensis* (Nebraska sedge) surrounding it. Leo's Pasture and Horse Pasture Fields are flood irrigated from Smith Creek (Lossing *in litt.* 2013b). There is either a risk of *Bromus tectorum* (cheatgrass) invasion or a limited presence of this species in these pastureland fields.

Hayland fields (Swamp, Rock Field, South Rock, Derrick, Haystack, Lower Meadow), in general, contain a mixture of native grasses such as *L. triticoides* with pasture forage species such as *M. sativa*, *T. repens*, *L. arundinaceum*, *B. inermis*, *P. pretense* (Kentucky bluegrass), and *Poa* sp. *Artemisia tridentata* spp. *wyomingensis* (Wyoming big sagebrush), *C. nauseosus*, and *S. vermiculatus* occur along ditches. Noxious and other invasive weeds that may be found in these fields include *Lepidium latifolium* (tall whitetop), *Acroptilon repens* (Russian knapweed), *Rumex* sp. (dock), *Cardaria draba* (hoary cress), and *Cirsium vulgare* (bull thistle). The irrigated portions of Swamp and Lower Meadow Fields contain *C. nebrascensis* and *M. sativa*, respectively. South Rock, Derrick, and a portion of Haystack Fields are also flood irrigated using Smith Creek as a water source (Lossing *in litt.* 2013b). There is either a risk of *Bromus tectorum* invasion or a limited presence of this species in the hayland fields.

Rangeland/riparian fields (Big Reservoir, Smith Creek, BB Unfenced HQ South, CC Unfenced HQ North, Billie Canyon, Upper Billie Canyon, Lower Edwards Creek, Edwards Creek, Upper Edwards Creek, Topia), in general, contain a variety of vegetation species. Depending on the field, species such as *Populus* sp. and *Salix* sp., *S. vermiculatus*, wet and dry meadow vegetation, *Distichlis spicata* (salt grass), *Sporobolus airoides* (alkali sacaton), *L. triticoides*, *Carex* sp., *Juncus* sp., *Achnatherum hymenoides* (Indian ricegrass), *Elymus elymoides* (squirreltail), *Atriplex confertifolia* (shadscale), *A.t.* ssp. *tridentata*, *A.t.* spp. *wyomingensis*, *A.t.* spp. *vaseyana* (mountain big sagebrush), *A. arbuscula* (low sagebrush), and *Pinus monophylla*/*Juniperus osterosperma* (pinyon/juniper woodland) may be found. Lower Edwards Creek Field is seasonally irrigated. There is either a risk of *Bromus tectorum* invasion or a limited presence of this species in rangeland/riparian fields.

The overall rating for wildlife values on the private lands indicate habitat is fairly good, but there are opportunities for improvement (Smith Creek Ranch LTD and NRCS 2010). Greater sage-grouse brood-rearing habitat was likewise considered fairly good, but could be improved (Smith Creek Ranch LTD and NRCS 2010). All of the enrolled lands are currently utilized by greater sage-grouse to different extents during their various life history stages (Table 2; Coombs, pers. comm. 2013b).

**Table 2. Greater Sage-grouse Use at Smith Creek Ranch, Lander and Churchill Counties, Nevada.**

<b>Lander County</b>		
<i>Field</i>	<i>Land Use</i>	<i>Sage-grouse Season of Use</i>
Big Reservoir	Rangeland	Late brood-rearing
Fish Pond	Fishing/Pasture	Fall
Mares Pasture	Fishing/Pasture	Fall
Raising Pond	Pasture	Fall
Leo's Pasture	Pasture	Fall
Horse Pasture	Pasture	Summer
Swamp	Hay/Pasture	Adults; Brood-rearing
Rock Field	Hay/Pasture	Adults; Brood-rearing
South Rock	Hay/Pasture	Adults; Brood-rearing
Derrick	Hay/Pasture	Adults; Brood-rearing
Haystack	Hay/Pasture	Adults; Brood-rearing
Lower Meadow	Hay/Pasture	Adults; Brood-rearing
Brush	Pasture	Adults; Brood-rearing
BB Unfenced HQ South	Rangeland/Unfenced with BLM	Adults; Brood-rearing
CC Unfenced HQ North	Rangeland/Unfenced with BLM	Adults; Brood-rearing
Smith Creek	Rangeland/Unfenced with BLM	Late Summer
Billie Canyon	Rangeland/Unfenced with BLM	Nesting; and until Winter
Upper Billie Canyon	Rangeland/Unfenced with BLM	Nesting; and until Winter
<b>Churchill County</b>		
<i>Field</i>	<i>Land Use</i>	<i>Use Period</i>
Lower Edwards Creek	Rangeland/Pasture	Early Brood-rearing until Late Summer
Edwards Creek	Rangeland	Early Brood-rearing until Late Summer
Upper Edwards Creek	Rangeland/Unfenced with BLM	Nesting; and until Winter
Topia	Rangeland/Unfenced with BLM	Nesting; and until Winter

While there are no known leks located on Smith Creek Ranch LTD lands (enrolled or otherwise), there are five leks (Cedar Creek, North Topia, South Topia, Edwards Creek, and Smith Creek) located on BLM-administered lands in the vicinity of Smith Creek Ranch. The Smith Creek Lek lies nearest (approximately 0.5 mile to 4.5 miles) to several enrolled lands (*i.e.*, Lower Meadow, Haystack, Brush, BB Unfenced HQ South, CC Unfenced HQ North, Derrick, Rock, South Rock, Swamp, Horse, Leo's Pasture, Raising Pond, Mares Pasture Fields). Four additional leks occur near other enrolled fields. The Cedar Creek Lek lies near (about 1 mile) Lower Edwards Creek, Edwards Creek, and Upper Edwards Creek Fields. North Topia and South Topia Leks are located near (about 1 mile) the Topia Field. The Edwards Creek Lek is located within about 0.5 mile distance of and between Upper Billie Canyon and Billie Canyon Fields. This lek is also within about 2 miles of Smith Creek Field and about 3.5 miles of Big Reservoir Field. Data indicate that these five leks have each had some level of activity (demonstrated by number of males using lek) between 1999 and 2013 (Nevada Department of Wildlife (NDOW) 2011; S. Espinosa, NDOW, pers. comm. 2013) (Appendix C). Breeding population estimates for the entire Desatoya Population Management Unit for 2011, 2012, and 2013 are 935, 1,274, and 1,048 birds, respectively (Espinosa *in litt.* 2014a, b). Hundreds of greater sage-grouse have been observed on Smith Creek Ranch's hay and pasturelands during May through December (Coombs, pers. comm. 2013c).

### **Covered Activities**

The term "covered activities" refers to those activities carried out by the enrolled landowner or his/her authorized representative on enrolled lands that may result in authorized incidental take of covered species (*e.g.*, greater sage-grouse) consistent with the Enhancement of Survival permit and this CCAA.

The activities of Smith Creek Ranch LTD to be covered by the Enhancement of Survival permit and this CCAA include:

Livestock operations—including grazing of forage, herding of cattle, calving, branding, feeding of hay and dietary supplements, accessing water or the development of water sources (with appropriate permit as needed), predator control by employees (with appropriate license as needed), gathering and shipping of cattle, disposal of dead animals, fencing projects, and general animal husbandry practices.

Farming operations—including plowing, cultivating, or harvesting of pastures and hay fields, irrigating, clearing or burning of ditch banks and fields, non-chemical weed control within fields, fertilization, brush thinning (including sagebrush) and willow thinning as needed, storing of hay or other products, and maintenance of houses, outbuildings, fences, and corrals. While it is common to use various herbicides, insecticides, and rodenticides as well as other chemicals to achieve management goals, the use of chemicals is not defined as "covered activities" under this CCAA and no incidental take coverage is being requested for their use as part of this CCAA. This is consistent with Service policy regarding chemical use and section 10 permits.

Recreation—including legal fishing and hunting (big game, small game, and upland birds). Hunting signs (access allowed with permission) have been posted on the fenced portions of the

ranch. While it is legal to hunt greater sage-grouse in Nevada pursuant to state law, the hunting of greater sage-grouse is not included as one of the “covered activities” under this CCAA and no incidental take coverage is being requested as part of this CCAA. Other occasional recreational activities include camping, horseback riding, all-terrain vehicle (ATV)/off-highway vehicle (OHV) use on and off trails/roads, and hiking (on trails and roads, and cross country).

Conservation measures and changed circumstances measures-including the conservation measures as indicated in Tables 3 and 4 and Appendix E as well as in the changed circumstances section.

### **Conservation Measures and Obligations of the Parties**

According to the Service’s 2010 listing finding (75 FR 13909), the primary threats to greater sage-grouse is habitat loss, fragmentation, and degradation. Therefore, for this CCAA to minimally address the conservation needs of the greater sage-grouse, the following conservation measure must be implemented by the landowner or authorized representative on the enrolled portion of their property:

*Maintain contiguous habitat by avoiding fragmentation (e.g., do not subdivide property, consider conservation easements).*

#### **Smith Creek Ranch LTD**

The enrolled landowner is committed to the following general measures:

1. Avoid impacts to populations and individual greater sage-grouse present on the enrolled property to the maximum extent practicable.
2. No leasing of or development by landowner of enrolled lands to wind power development (including any appurtenant turbine towers, roads, fences, or power lines).
3. No leasing of or development by landowner of enrolled lands to oil and gas development (including roads, fences, or power lines) where the landowner has discretion.
4. No leasing of or development by landowner of enrolled lands to mineral development (including roads, fences, or power lines) where the landowner has discretion.
5. Continue current practices identified as conserving greater sage-grouse habitat. Implement grazing management plans (BLM 1999, Smith Creek Ranch LTD and NRCS 2010) intended to meet specific habitat goals for the greater sage-grouse. This may include adjustment of livestock stocking rates, rest-rotation patterns, grazing intensity and duration, avoidance of nesting areas during the nesting season, and contingency plans for varying prolonged weather patterns including drought. Grazing management can be adjusted through adaptive management.
6. Implement all agreed upon conservation measures listed in Tables 3 and 4 within the agreed timeframe.
7. Conduct monitoring activities and other reporting requirements identified in this CCAA (pp. 42-46 and Appendix E).
8. Maintain a digital photo database to document conservation measure performance. This database is one tool for analyzing conservation measures for adaptive management of the CCAA.

9. Coordinate with NRCS and the Service to determine the number and location of vegetation transects, photo points, etc. in the fields to conduct biological monitoring prior to conservation measure implementation.
10. Provide the Service with access to the enrolled property at mutually agreeable times to identify or monitor greater sage-grouse populations and their habitats, and to monitor effectiveness and compliance with the CCAA. This monitoring will occur at a minimum of once per year.
11. Allow the Service and NRCS to exchange habitat and other planning or monitoring information related to the enrolled property when requested.
12. Notify the Service at least 60 days in advance of a potential land sale, and notify the prospective landowner of the existence of this CCAA (and/or has previously recorded the CCAA) in order for the potential new landowner to decide whether to become a party to this CCAA, in the event that the enrolled landowner must sell the conservation lands prior to the end of the duration of this CCAA and permit. If the enrolled landowner has received funding from other sources, such as the Partners for Fish and Wildlife Program or NRCS, they may need to repay other funding sources in accordance with agreements the enrolled landowner makes with these funding sources. If the new landowner does not wish to become a party to this CCAA and the permit is not transferred, or a new permit is not issued, he/she will not receive the benefits of the permit authorizing incidental take of greater sage-grouse.

#### Conservation Measures

Numerous conservation measures will be implemented by Smith Creek Ranch LTD to reduce or remove threats to the greater sage-grouse on enrolled lands, and are they outlined in this CCAA. While specific acres have been identified for various measures it is also anticipated that these efforts will impact and have benefits over a larger, associated area. For example, by installing grade stabilization structures in a stream which improves riparian habitat by increasing stream sinuosity, stabilizing stream banks, and reducing siltation, it will also have positive impacts to associated meadow habitat. Smith Creek Ranch LTD agrees to implement the following conservation measures indicated in Tables 3 and 4.

**Table 3. Conservation Measures to be Implemented at Smith Creek Ranch, Threats They Address, and Their Conservation Benefit. The table also indicates annual compliance monitoring to be reported to the Service.**

<b>THREAT</b>	<b>CONSERVATION MEASURE</b>	<b>CONSERVATION BENEFIT</b>	<b>ANNUAL COMPLIANCE MONITORING (Mention each category annually, and expand on those conservation measures/actions implemented in a particular year)</b>
<b>Habitat Fragmentation</b>			
Fragmentation can lead to lek, nest, or habitat abandonment resulting in decreased reproductive success.	Maintain contiguous habitat by avoiding further fragmentation (e.g., not subdividing property, establishing a conservation easement).	Reduces disruptions to sage-grouse activities, maintains habitat quantity and quality, maintains population connectivity and recruitment, and reduces vulnerability to predation.	Describe measures to avoid/reduce fragmentation of habitat (e.g., consolidation of existing roads). If a conservation easement is implemented, describe it and the acres enrolled.
<b>Infrastructure</b>			
Infrastructure (e.g., roads, buildings, power lines, ) can fragment habitat decreasing its use and quality for sage-grouse.	Avoid new infrastructure (e.g., roads, buildings, powerlines) within 3.1–5 .0 miles of active leks and within sage-grouse habitats.	Removes or reduces further habitat fragmentation amount and mortality due to infrastructure across landscape.	Describe specific actions taken to avoid new infrastructure.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Brush Management</b>			
<p>Sagebrush management (e.g., prescribed fire, chemical treatment, mechanical removal) can decrease sage-grouse habitat quantity and quality.</p> <p>Brush management on Smith Creek Ranch also includes rabbitbrush and greasewood management.</p>	<p>Avoid eliminating sagebrush. No new conversion of rangeland to cropland.</p> <p>Actively manage the sagebrush component to achieve various seral stages and species for each field to promote a healthy sagebrush ecosystem on the ranch. This includes enhancement by removing rabbitbrush and greasewood from sagebrush areas.</p>	<p>Maintains and enhances sage-grouse habitat.</p>	<p>Describe actions to avoid reducing sagebrush.</p>
	<p>Work with NRCS/Service (and possibly other entities) to plan sagebrush treatments that are necessary (refer to Conservation Plan). If treatment is chosen, utilize a mosaic pattern rather than removing a large uniform block. Avoid using prescribed fire as a sagebrush treatment method. A rotary brush hog may be used to chop senescent sagebrush.</p> <p>Periodic treatment of sagebrush as needed. In sagebrush steppe areas a percentage (specific treatment aspects will be addressed by individual fields) of the existing canopy will remain.</p>	<p>Reduces long-term negative impacts to sage-grouse habitats.</p> <p>On Big Reservoir, thinning of sagebrush and wild rose will occur next to wet meadow to increase meadow habitat for sage-grouse. In other small areas, it can cause sagebrush recruitment and open up the canopy for forbs and grasses.</p> <p>Blocks of sagebrush will remain to provide food, cover, and roosting habitat for sage-grouse and other sagebrush obligate species.</p>	<p>Describe sagebrush management.</p>

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Livestock Management</b>			
Some grazing management practices alter sagebrush and other shrub cover and/or grass and forbs composition decreasing sage-grouse habitat quantity and quality.	Implement a grazing strategy- Smith Creek Ranch LTD and NRCS (2010) or BLM (1999) [or other - BLM and U.S. Forest Service (USFS) 2013] plans.  Prescribed grazing allows for adaptive management.	Maintains or enhances sage-grouse habitat, reproduction, and survival.  Minimizes or avoids negative impacts to sage-grouse habitats.	Provide the Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) which includes the grazing plan to the Service.
Concentration of livestock during certain activities (e.g., stock tank placement, branding) can impact vegetation and soil structure decreasing sage-grouse habitat quantity and quality.	Avoid (or rotationally utilize) known nesting and brood-rearing habitats for locations where activities concentrate livestock.	Maintains or enhances sage-grouse habitat, reproduction, and survival.  Minimizes or avoids negative impacts to sage-grouse habitats caused by grazing.	Describe how these habitats were avoided.
	Place salt or mineral supplements in areas to avoid or minimizing impacts to sage-grouse habitats.		Describe locations of salt or mineral supplements in relation to sage-grouse habitat.
	Avoid placement of salt or supplements within 0.25 mile of riparian habitats.		Describe locations of salt or mineral supplements in relation to riparian habitat.
	Fence off riparian habitat from trampling if necessary and install fence markers as appropriate.		Describe fencing of riparian habitats.
	Avoid livestock concentrations in areas vulnerable to cheat grass dominance.		Describe how these habitats were avoided.

**Table 3. Livestock Management. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
Livestock, humans, and vehicles can physically disturb sage-grouse and result in lek or nest abandonment or direct loss to nests causing decreased reproductive success.	From March 1 to May 15, avoid new surface disturbing activities (e.g., roads, pipelines, corrals) within 3.1–5.0 miles of active lek perimeter.	Reduces disruptions to lek and nesting activity, reducing lek and nest abandonment and predation risk.	Describe any surface disturbing activities that occurred from March 1 to May 15 in relation to lek locations.
	From March 1 through May 15, avoid disruptive activities between 6 p.m. and 8 a.m. within 3.0 miles of active lek perimeter.		Describe any disruptive activities that occurred from March 1 to May 15.
	From March 15 through June 30, avoid livestock concentrates in nesting habitat.		Describe if livestock were concentrated in nesting habitat from March 15 to June 30 and actions taken to disperse concentrations.
	From March 15 through June 30, avoid off-trail vehicular travel in nesting habitat, unless essential for routine ranch management (e.g., fence repair, veterinary services, finding lost livestock).		Describe if off-trail vehicular traffic occurred in nesting habitat from March 15 through June 30.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Riparian Habitat (including Wet Meadows and Springs)</b>			
Disturbed or degraded riparian habitat can reduce quality and quantity of sage-grouse meadow habitat.	Will maintain or improve sage-grouse habitat by installing grade stabilization structures (rock dams, v-weirs) on 2,600 feet of stream to prevent erosion.	Improve riparian habitat to encourage stream sinuosity and stabilize stream banks; reduces siltation, improves meadow habitat.	Describe where and the number and type of structures installed. Indicate miles of stream habitat and acres of riparian meadow habitat maintained or improved.  Describe how habitat responded.
	Provide stream bank protection through proper livestock grazing management.		
Willow thinning along ditch system is necessary to maintain irrigation flows and quantity, but may negatively impact sage-grouse habitat.	Willow management provides for reducing willows where they have encroached, but willows will be retained where they are not encroaching into wet meadows or are not interfering with ditch system to provide habitat for other wildlife species.	Removal of excess willows encroaching into meadows to maintain wet meadow habitat for sage-grouse.  Willows will be removed during winter to improve effectiveness and to avoid nesting period for bird species.	Describe where and the number of acres removed. Describe how habitat responded.
<b>Water Development Design</b>			
Livestock watering tanks can result in sage-grouse entrapment and drowning.	Fit wildlife escape ramps on existing and new water tanks/troughs.	Reduces potential for direct mortality.	Described where and how many ramps were installed.
Water diversions can result in drying up of springs and associated meadows decreasing the quantity and quality of these important sage-grouse habitats.	Allow springs to free-flow (do not capture all of the water at the point of diversion) to maintain/enhance meadow and riparian habitat. Fence off riparian habitat to prevent trampling if necessary, and use fence markers.	Maintains/enhances nesting/early brood rearing habitat.	Describe if springs were developed and where habitat was protected.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Fences</b>			
Sage-grouse can collide with poorly designed or located fences resulting in injury or death.	Avoid construction of new fences within 1.2 miles of active leks or riparian areas where broods concentrate.	Reduces sage-grouse injury and death from collisions.	Describe if existing fences were relocated to avoid certain sage-grouse habitats.
	Cross fencing may be installed to improve grazing management.	Maintains or enhances sage-grouse habitat, reproduction, and survival.	Describe location of new fences.
	Mark existing fences, especially where previous collisions were observed or on required new fences as appropriate. Redesign or relocate fences where collisions are observed.	Minimizes or avoids negative impacts to sage-grouse habitats.	Describe areas where fencing was marked, redesigned or relocated. Report the number of sage- grouse injuries or mortalities associated with fence collisions annually.
	Remove unnecessary fencing; recycle materials when possible.	Reduces perching opportunities for avian predators.	Describe where and the amount of unnecessary fencing removed.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Invasive Plant Species</b>			
Establishment of invasive and nonnative plant species reduces sage-grouse habitat quantity and quality.	Work with NRCS to identify areas of invasive species and control them.	Reduces negative impacts to sage-grouse habitat quantity and quality.	Describe activity taken. Describe method of treatment, number of acres treated, indicate fields treated, and monitor and report results.
	Follow the Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) which includes Integrated Pest Management (IPM).		
	Use grazing plans to assist in weed control. Manage livestock to reduce soil disturbance and overutilization of native grasses and forbs in areas least resistant and resilient to invasive annual grasses.		
	Work to remove invasive plant species; inter-seed range with beneficial seed mixes.		
	Use suitable sage-grouse habitat seed mixes (appropriate shrub, forbs, and grass components).		Describe actions taken.
	Appropriately manage newly seeded/planted rangeland (i.e., rest newly seeded areas from livestock grazing, including post wild land fire rehabilitation).	Reduces negative impacts to sage-grouse habitat quantity and quality by improving seeding/planting success.	Describe actions taken.
	Use certified weed-free seed mixes and mulches.		Describe weed-free seed mixes and mulches used and where planted.

**Table 3. Invasive Plant Species. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
	Where possible, reduce the risk of wild land fire, especially if cheatgrass is present on rangeland.	Minimizes impacts to sage-grouse habitats from wild land fires or reduces their likelihood.	Describe management used to reduce risk of wild land fire.
	Work with NRCS/Service (and possibly other entities) to address post-wild land fire issues.	Reduces impacts to sage-grouse habitats from wild land fires.	
	Immediately reestablish mixes of sagebrush, native grasses, and forbs after fire (or other disturbances) to prevent cheatgrass and other weeds from invading.	Reduces negative impacts to sage-grouse habitat quantity and quality from disturbances.	Describe seed mixes used, where planted, seeding conditions, and success.
<b>Pinyon-Juniper Encroachment</b>			
Encroachment of woodland species can reduce the quantity and quality of sage-grouse habitat, reduce its use, or cause abandonment.	<p>Treat/remove undesirable woodland species encroaching into sage-grouse habitats.</p> <p>Work with NRCS/Service to determine appropriate method. Trees likely removed during winter to early spring. Will not remove trees during April 15-July 15 to avoid nesting bird season. If pinyon jay (<i>Gymnorhinus cyanocephalus</i>) nesting encountered (or other species), tree(s) will not be removed until after fledging.</p>	<p>Maintains/improves/creates important sagebrush habitats such as nesting and over wintering habitat.</p> <p>Removes perch sites for predators.</p> <p>Phase I and II pinyon- juniper stands will be removed with intact understories so seeding will not be necessary.</p>	Describe treatment in areas with encroachment and number of acres treated.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Predation</b>			
Some ranch operations can increase opportunities for avian and mammalian predation of sage-grouse and nests.	New or existing dead animal piles (preferably buried) should not be located within 3.1 miles of occupied leks, or within nesting, or brood-rearing habitat.	Reduces injury or mortality of sage-grouse individuals.	Describe measures taken to avoid and minimize predation. Report observed predation.
	Targeted corvid control when necessary and as appropriately permitted/licensed.		
	Limit pet access to leks, nesting, or brood-rearing habitat.		
<b>Feral Horse Management</b>			
Concentration of feral horses can impact vegetation and soil structure decreasing sage-grouse habitat quantity and quality.	Work with BLM to facilitate periodic removal of feral horses from ranch lands to keep feral horse numbers at designated Appropriate Management Level (AML) for the Desatoya Herd Management Area (BLM 2012). Though horse gathers will not occur on any enrolled land, they will improve the management of the enrolled unfenced private land.	Maintains important sage-grouse habitats.	Describe the number of feral horses removed.  Describe how the habitat responded.

**Table 3. Continued.**

THREAT	CONSERVATION MEASURE	CONSERVATION BENEFIT	ANNUAL COMPLIANCE MONITORING
<b>Drought</b>			
Prolonged drought can harm plants important to sage-grouse, reducing habitat quality and quantity.	When necessary, incorporate a drought management component into the grazing plans (Smith Creek Ranch LTD and NRCS 2010, BLM 1999) to adjust livestock use (season of use, intensity, and/or duration) to reduce impact on perennial herbaceous cover, plants species diversity, and plant vigor.	Maintains or reduces potential loss of sage-grouse habitat, reproduction, and survival.	Describe if AUMs (Animal Unit Months) or season of use, etc. changed as a result of drought.
<b>Haying Operations</b>			
Hay cutting can kill or injure sage-grouse as well as remove cover.	Haying timed after June 1-15 of each year and between 10 a.m. and 6 p.m. as discussed in the Conservation Plan.	Eliminate or reduce accidental take of birds.	Describe haying activities by field to avoid or reduce take of sage-grouse. Report any take.
	Cut field inside out or from side to side to provide escape route to adjacent fields.		
<b>Planting of Pasture and Hay Lands</b>			
Replanting of pasture and hay fields are needed as production decreases. This can remove sage-grouse habitat during year of planting.	Per Conservation Plan (Smith Creek Ranch LTD and NRCS 2010), replant 1 field per season taking into account sage-grouse brood-rearing habitat. Rotation will not disturb more than 20 percent of sage-grouse habitat in any given year.  Fields may be planted to increase legumes and cover.		Describe planting activities by field to avoid impact to sage-grouse habitat.

Table 4 indicates specific conservation measures by field that will be implemented by Smith Creek Ranch LTD. In addition, the acreage or linear distance of the treated area is indicated as well as when the treatment is scheduled for implementation. Monitoring and reporting of these activities on particular fields will occur as indicated in Table 3 and Appendix E.

**Table 4. Specific Conservation Measures Indicated by Field and Timeframe to be Implemented by Smith Creek Ranch LTD. (Note in most cases treatments of 5 acres or less will be completed at one time. Areas larger than 5 acres may also be completed at one time.)**

Field	Conservation Measure	Acres or Linear Distance Treated	Year (s) Initiated (1-20)	Maintenance Years
Big Reservoir	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	277 acre (ac)	1-20	N/A
	Rebuild/repair perimeter fence (wildlife friendly); remove portion of old fence	6,600 feet (ft); 3,000 ft	2-5; 2-5	6-20; 6-20
	Installation of grade stabilization structure(s)	1,300 ft (5-6 structures)	1-7	8-20
	Streambank protection due to grazing plan	1,300 ft	1-20	N/A
	Install fence markers	500 ft	10	11-20
	Remove pinyon-juniper trees	3 ac/year (yr)for 10 years (yrs) = 30 ac	1-10	11-20
	Willow thinning	3-5 ac over 2 yrs	2-3	4-20
	Brush thinning/removal	15 ac	2-6	7-20
	Noxious or invasive weed control	40 ac	1	2-20

Field	Conservation Measure	Acres or Linear Distance Treated	Year (s) Initiated (1-20)	Maintenance Years
Fish Pond	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	9 ac (includes 6 ac pond)	1-20	N/A
	Install fence markers	1,100 ft	9	10-20
	Noxious or invasive weed control	3 ac	1	2-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Mares Pasture</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	3 ac	1-20	N/A
	Install fence markers	600 ft	8	9-20
	Willow thinning	0.5 ac	1	2-20
	Noxious or invasive weed control	1 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Raising Pond</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	14 ac	1-20	N/A
	Install fence markers	1,000 ft	9	10-20
	Willow thinning	5 ac	1-5	6-20
	Noxious or invasive weed control	2 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Leo's Pasture</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	7 ac	1-20	N/A
	Install fence markers	1,500 ft	8	9-20
	Willow thinning	1 ac	1	2-20
	Noxious or invasive weed control	3 ac	1	2-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Horse Pasture</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	34 ac	1-20	N/A
	Install fence markers	2,750 ft	7	8-20
	Willow thinning	2 ac	1	2-20
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	10 ac	Sometime during yrs 1-5	6-20
	Noxious or invasive weed control	20 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Swamp</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	26 ac	1-20	N/A
	Install fence markers	3,000 ft	6	7-20
	Willow thinning	10 ac	1	2-20
	Noxious or invasive weed control	10 ac	1	2-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Rock House</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	27 ac	1-20	N/A
	Install fence markers	1,500 ft	1	2-20
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	1 ac	1	2-20
	Noxious or invasive weed control	10 ac	1	2-20
	Haying after June 1-15 and between 10 a.m. and 6 p.m.	27 ac	1-20	N/A
	Interseed field with legumes/alfalfa	27 ac	3-4	5-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>South Rock</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	18 ac	1-20	N/A
	Install fence markers	1,000 ft	2	3-20
	Brush thinning/removal	2 ac	1	2-20
	Noxious or invasive weed control	8 ac	1	2-20
	Haying after June 1-15 and between 10 a.m. and 6 p.m.	10 ac	1-20	N/A

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Derrick</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	25 ac	1-20	N/A
	Install fence markers	1,000 ft	3	4-20
	Noxious or invasive weed control	15 ac	1	2-20
	Haying after June 1-15 and between 10 a.m. and 6 p.m.	12 ac	1-20	N/A

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Haystack</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	77 ac	1-20	N/A
	Install fence markers	6,000 ft	4	5-20
	Willow thinning	0.5 ac	1	2-20
	Brush thinning/removal	1 ac	5-6	7-20
	Noxious or invasive weed control	20 ac	1	2-20
	Haying after June 1-15 and between 10 a.m. and 6 p.m.	70 ac	1-20	N/A

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Lower Meadow</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	170 ac	1-20	N/A
	Install fence markers	12,000 ft	5	6-20
	Brush thinning/removal	8-10 ac	8-9	10-20
	Noxious or invasive weed control	75 ac	1	2-20
	Haying after June 1-15 and between 10 a.m. and 6 p.m.	50 ac	1-20	N/A

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Brush</b>	Implement Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) - grazing plan	110 ac	1-20	N/A
	Install fence markers	11,000 ft	10	11-20
	Willow thinning	50 ac	5-7	8-20
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	110 acres	5-7	8-20
	Noxious or invasive weed control	80 ac	1	2-20
	Interseed field with legumes/alfalfa	5 ac/yr for 10 yrs = 50 ac	2	11-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>BB Unfenced HQ South</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	200 ac	1-20	N/A
	Noxious or invasive weed control	20 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>CC Unfenced HQ North</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	204 ac	1-20	N/A
	Noxious or invasive weed control	20 ac	1	2-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Smith Creek</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	80 ac	1-20	N/A
	Brush thinning/removal (treatment predominantly rabbitbrush; sagebrush will remain)	20 ac	5	6-20
	Pinyon-juniper removal (to restore canyon riparian corridor)	5-10	1-7	8-20
	Noxious or invasive weed control	20 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Billie Canyon</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM USFS 2013)	40 ac	1-20	N/A
	Pinyon-juniper removal (40 ac of Phase II and III class P/J was removed in 2008.)	N/A	In year 10 of CCAA will remove young saplings.	11-20
	Noxious or invasive weed control	10 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Upper Billie Canyon</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	40 ac	1-20	N/A
	Pinyon-juniper removal	10 ac	6	7-20
	Noxious or invasive weed control	10 ac	1	2-20
	Spring development (spring box and 0.25 mile of pipe); one trough and escape ramp	1 ac	6	7-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Lower Edwards Creek</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	40 ac	10	NA
	Install fence markers	20,000 ft	10	11-20
	Willow thinning	20 ac	1	2-20
	Brush thinning/removal	20 ac (5 ac over 4 yrs)	2-5	6-20
	Noxious or invasive weed control	25 ac	1	2-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Edwards Creek</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	480 ac	1-20	N/A
	Noxious or invasive weed control	100 acres	2	3-20

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Upper Edwards Creek</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	160 ac	1-20	N/A
	Pinyon-juniper removal	60 ac	10	11-20
	Brush thinning/removal	40 ac	10	11-20
	Noxious or invasive weed control	30 ac	1	2-20
	Spring protection with brush fence	10 ac	10-12	13-20

**Table 4. Continued.**

<b>Field</b>	<b>Conservation Measure</b>	<b>Acres or Linear Distance Treated</b>	<b>Year (s) Initiated (1-20)</b>	<b>Maintenance Years</b>
<b>Topia</b>	Implement BLM (1999) Management Plan-grazing plan (or other plan - BLM and USFS 2013)	120 ac	1-20	N/A
	Pinyon-juniper removal	100 ac	15	16-20
	Noxious or invasive weed control	20 ac	1	2-20

**U.S. Fish and Wildlife Service**

The Service agrees to provide the following assistance:

1. Provide expertise on the conservation of greater sage-grouse and provide information on Service requirements regarding CCAAs.
2. Provide coordination in development and implementation of this CCAA.
3. Issue an Enhancement of Survival permit to Smith Creek Ranch LTD under section 10(a)(1)(A) of the ESA in accordance with 50 CFR 17.32(d) should the species be listed at some time in the future, to commence upon the listing of the greater sage-grouse and continuing through the remainder of the term of this CCAA, that would provide Smith Creek Ranch LTD with authorization for incidental take of greater sage-grouse and provide regulatory assurances. The permit, if issued, would authorize take of greater sage-grouse resulting from otherwise lawful activities on enrolled lands that is consistent with the incidental take anticipated under the CCAA.
4. Provide Service funding to support implementation of particular conservation measures indicated in this CCAA to the extent funding is available and requested.
5. Carry out any responsibilities for implementing conservation, monitoring, or other measures agreed to by the Service associated with this CCAA.
6. Ensure the landowner is notified at least 48 hours in advance with a time, location, and names of Service personnel entering the enrolled property to conduct compliance monitoring.
7. Coordinate with Smith Creek Ranch LTD regarding the completion of all monitoring and reporting requirements set forth in this CCAA.
8. Coordinate with Smith Creek Ranch LTD and NRCS in determining number and location of vegetation transects, photo points, etc. in the fields to conduct biological monitoring.
9. Participate in vegetation training session(s) provided by NRCS (if time and funding allow) to assist or observe (if timing and funding allow) Smith Creek Ranch LTD employees during vegetation monitoring efforts.
10. Contact NDOW annually to obtain nearby lek data and share with landowner.
11. Evaluate biological monitoring data collected to determine if Smith Creek Ranch LTD is achieving requirement/conservation benefits to greater sage-grouse on their enrolled lands.

12. Suspend or revoke, in whole or in part, the section 10(a)(1)(A) permit in those cases where the terms of the CCAA are not being met and where efforts with the landowner to resolve compliance issues have not been effective.

### **Natural Resources Conservation Service**

At the request of the landowner and as funding allows, the NRCS has agreed to provide the following technical assistance to the landowner to assist in implementation of this CCAA though the NRCS is not a signatory to the document. Because of the long-standing relationship between the landowner and NRCS due to required ranch monitoring related to the Smith Creek Ranch LTD Conservation Plan (Smith Creek Ranch LTD and NRCS 2010), the agency will:

1. Assist in the continued implementation of the Smith Creek Ranch LTD Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) which includes a grazing plan.
2. Assist in the continued implementation of Smith Creek Ranch LTD Integrated Pest Management Plan.
3. Revise the Smith Creek Ranch LTD Conservation Plan (Smith Creek Ranch LTD and NRCS 2010) and Integrated Pest Management Plan as needed.
4. Assist if requested by the applicant (Smith Creek Ranch LTD) to determine the number and location of vegetation transects, photo points, etc. in the fields to conduct biological monitoring for this CCAA.
5. Provide training if requested by the applicant (Smith Creek Ranch LTD) to his employees to conduct vegetative monitoring per the Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (NRCS 2010; Appendix D) for this CCAA. The Service may also participate in this training session(s) (if time and funding allow) to assist (if timing and funding allow) Smith Creek Ranch LTD employees with vegetation monitoring efforts.

### **Bureau of Land Management**

Smith Creek Ranch LTD has a 10-year (2004-2014) (currently in the process of renewal for years 2015-2024) Federal grazing permit (December 1 – November 30) for livestock grazing on public lands in this area (Edwards Creek, Carson Pasture, and Porter Canyon Allotments) administered by the BLM's Carson City District Office. In the future, Smith Creek Ranch LTD may wish to obtain a Certificate of Participation for a BLM Candidate Conservation Agreement (CCA).

Upon completion of this CCAA, it can be used as a template to draft a CCA, and the BLM may wish to work with the Service to develop a CCA relevant to the specific allotments mentioned above. The CCA would present conservation measures similar to those in the CCAA. As a result, the CCA would "dovetail" with this CCAA, providing benefits to greater sage-grouse on Federal lands leased by the private landowner/permittee similar to those benefits anticipated to occur on the private lands.

The BLM would likely agree in the future to the following technical assistance to help the landowner implement the conservation measures for the CCA:

1. Work with Smith Creek Ranch LTD to facilitate appropriate rangeland monitoring and/or training, and;
2. Implement a companion CCA.

In the future, it would be helpful to develop a CCA to provide management consistency across these CCAA enrolled lands and the BLM-administered lands for which Smith Creek Ranch LTD holds grazing permits.

### **Expected Conservation Benefits**

As identified in the Service's Candidate Conservation Agreement with Assurances Final Policy (64 FR 32726), the Service "must determine that the benefits of the conservation measures to be implemented, when combined with those benefits that would be achieved if it is assumed that conservation measures were also implemented on other necessary properties, would preclude or remove any need to list" the greater sage-grouse. This is the standard that all CCAAs must meet (i.e., the CCAA standard). In developing a CCAA, a non-Federal property owner thus needs to only address those threats, or the proportion of those threats, that he or she can control on the property enrolled in the CCAA.

When making a decision to list a species under the ESA, the Service is required to determine whether the species is threatened by any of the following factors: 1) The present or threatened destruction, modification, or curtailment of its habitat or range; 2) overutilization for commercial, recreational, scientific, or educational purposes; 3) disease or predation; 4) the inadequacy of existing regulatory mechanisms; or 5) other natural or manmade factors affecting its continued existence. There are threats to the greater sage-grouse related to each of these factors. However, the greatest threats are related to habitat loss, fragmentation, and degradation (75 FR 13909). A much more thorough discussion of the five factors can be found in the published warranted finding (75 FR 13909); a brief discussion is below.

### **Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range**

The greater sage-grouse is a landscape-scale species that requires large, contiguous areas of persistent sagebrush. Several activities contribute to sagebrush loss, fragmentation, and degradation which impact the greater sage-grouse (75 FR 13909). These activities include: conversion for agriculture, infrastructure (powerlines, communication towers, roads, fences, railroads), fire, invasive plant species, pinyon-juniper encroachment, livestock grazing, wild horse and burro grazing, energy development (oil, gas, coal), renewable energy development (wind, hydropower, solar, geothermal), and transmission corridors (75 FR 13909).

Characteristics within surrounding landscapes influence habitat selection by sage-grouse, and because adults exhibit strong site fidelity to seasonal habitats, they demonstrate little adaptability to changes (75 FR 13909). Fragmentation has been cited as a primary cause of declines in sage-grouse populations (75 FR 13909). Negative effects of fragmentation include reduced lek persistence and attendance, population recruitment, annual survival of yearlings and adults, female nest site selection and nest initiation, and loss of leks and winter habitat (75 FR 13909). Functional habitat loss also contributes to fragmentation of habitat as the species avoids areas

due to human activities even though sagebrush remains (75 FR 13909). Habitat loss and fragmentation also contribute to isolation of populations and increased risk of their extirpation (75 FR 13909). The threat of habitat destruction, modification, or curtailment by various means was considered significant to warrant listing under the ESA.

### **Overutilization for Commercial, Recreational, Scientific, or Educational Purposes**

The greater sage-grouse is no longer used for commercial purposes (75 FR 13909). Greater sage-grouse hunting in the United States is regulated by State wildlife agencies; hunting regulations are reevaluated each year and allow adjustments in annual harvest and emergency closures of seasons if need be (75 FR 13909). Because of the lack of experimental evidence and conflicting studies, there is uncertainty regarding harvest impacts on greater sage-grouse (75 FR 13909). Non-consumptive recreational activities (*e.g.*, lek viewing), tribal harvest (for religious or ceremonial practices or for subsistence), and handling for scientific purposes occur locally and at low levels; use for educational purposes is not known to occur (75 FR 13909). The threat of overutilization by various uses was not considered significant to warrant listing under the ESA.

### **Disease or Predation**

Greater sage-grouse are hosts to a wide variety of diseases and parasites; West Nile virus has resulted in population effects (75 FR 13909). West Nile virus was introduced in 1999 to the northeastern United States and is now distributed throughout greater sage-grouse range (75 FR 13909). Populations have experienced high mortality rates with often large reductions in local population numbers (75 FR 13909). Based on limited information, sage-grouse may be able to survive an infection, but because of the apparent low level of immunity and changes in the virus, widespread resistance is unlikely to occur (75 FR 13909). The threat of disease was not considered significant to warrant listing under the ESA.

Predation is the most identified cause of direct mortality for sage-grouse during all life stages (75 FR 13909). Because sage-grouse are a prey species, predation will continue to have an impact on the species (75 FR 13909). Where habitat is abundant and of good quality, predation is not a threat to greater sage-grouse (75 FR 13909). However, predation may be of greater concern where habitat quality is reduced by various activities such as those indicated under the section, Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range. Landscape fragmentation and degradation and humans can increase predator populations by improving their ability to secure prey and subsidizing food sources and nest and den sites (75 FR 13909). The threat of predation was not considered significant to warrant listing under the ESA.

### **Inadequacy of Existing Regulatory Mechanisms**

Most of the greater sage-grouse habitat in the United States is managed by Federal agencies (75 FR 13909). Numerous activities, as discussed above, are or may be negatively impacting greater sage-grouse habitat and populations (75 FR 13909). While Federal agencies' abilities to adequately address some of these issues are limited, others could be addressed with new mechanisms to protect the species and its habitat (75 FR 13909). For some issues, the regulatory mechanisms are adequate, but the implementation of the mechanisms vary widely across the

species' range, and habitat standards are not being met at a level necessary for the species (75 FR 13909). The threat of the inadequacy of existing regulatory mechanisms was considered significant to warrant listing under the ESA.

### **Other Natural or Manmade Factors Affecting its Continued Existence**

Other factors which can affect the greater sage-grouse include pesticides, contaminants, recreational activities, life history traits, and drought (75 FR 13909). These factors can cause sage-grouse mortality and sickness and direct and indirect disturbance to the species and habitat. The threat of other natural or manmade factors affecting its continued existence was not considered significant to warrant listing under the ESA.

### **Relationship of the Agreement to the Five Threat Factors**

This CCAA is intended to reduce threats to the greater sage-grouse, and conservation measures selected under this CCAA will address numerous threats or activities which are detrimental to greater sage-grouse as discussed under the five threat categories. Conservation benefits for the greater sage-grouse from implementation of this CCAA are expected in the form of avoidance and minimization of negative impacts, maintenance, enhancement, and restoration of greater sage-grouse habitats, enhancement of greater sage-grouse populations, and reduction of threats causing direct mortality on the enrolled lands in Churchill and Lander Counties. In addition, conservation of greater sage-grouse would be enhanced by improving and encouraging cooperative management efforts between the Service and the enrolled landowner who owns and controls greater sage-grouse habitat. Under the CCAA, greater sage-grouse conservation will be enhanced by providing ESA regulatory assurances such that, the enrolled landowner will not incur additional land use restrictions. Without regulatory assurances, a landowner may be unwilling to initiate conservation measures for the greater sage-grouse. Lastly, this CCAA may be used as a model for CCAAs in other parts of the greater sage-grouse range to encourage cooperative management and conservation.

The expected conservation benefits to the greater sage-grouse in relation to threats known or potentially occurring in this area are described in the following paragraphs.

#### **Habitat Fragmentation**

Regulatory assurances conferred to an enrollee provide an incentive for the landowner to maintain their ranch operations and lessen the likelihood these lands will be sold and divided for exurban development. Current conditions on Smith Creek Ranch LTD lands include roads, trails, and fences, irrigation ditches, and croplands and haylands. Agreeing to avoid further habitat fragmentation on the ranch by not constructing new buildings or roads within greater sage-grouse habitats assists in reducing disruptions to sage-grouse activities (Manier *et al.* 2014). Avoidance of new development and infrastructure benefits greater sage-grouse populations by maintaining habitat quantity and quality and connectivity among seasonal habitat distribution.

## Brush Management

Loss and degradation of sagebrush habitat has negatively impacted the greater sage-grouse by reducing habitat quantity and quality. Conservation measures include avoiding sagebrush elimination on the ranch and actively managing sagebrush to achieve various age classes across enrolled lands which will benefit greater sage-grouse. Treatments will be planned specifically for selected fields and each will result in a mosaic of remaining sagebrush (treatment details to be determined with NRCS and Service assistance) (Braun 1998). Brush management on the enrolled lands also includes the removal of rabbitbrush and greasewood from sagebrush stands where these species have become dominant. Conservation measures involving brush management on enrolled lands would maintain and enhance areas of sagebrush-steppe for greater sage-grouse over the long-term and involve approximately 229 acres.

## Livestock Management

Livestock grazing can affect vegetation, soils, water, and nutrient availability due to the consumption or alteration of vegetation, redistribution of nutrient and seeds, trampling of plants and soils, and disrupting microbiotic crusts (Connelly *et al.* 2004).

Unsustainable grazing levels can result in loss of vegetative cover, decreased plant litter, reduced infiltration rates, increased bare ground, reduced nutrient cycling, increased soil erosion, decreased water quality and reduced wildlife habitat quality (Wisdom *et al.* 2002; Knick *et al.* 2011). Detrimental grazing can influence annual conditions in the short term and the accumulation of selective grazing pressure can cause an altered vegetation dominance over the long-term (Manier *et al.* 2013).

The ability to change vegetative conditions occurs primarily through the management of livestock herds by selecting where they graze, when they graze, the length of time they graze, and in what numbers they graze (Cagney *et al.* 2010). These choices, in addition to, fence placement, herding techniques, salt and mineral placement, water development, and livestock type, provide most livestock management options. In some cases, maintaining current management activities may provide suitable habitat to meet the needs of greater sage-grouse; however, some activities may be displacing birds. In sagebrush-steppe, the most dependable way to ensure a healthy plant community is to adhere to a light utilization standard (Cagney *et al.* 2010).

Conservation measures in this CCAA avoid or minimize direct physical threats by not concentrating livestock in known nesting or brood-rearing habitat when these areas are being used by greater sage-grouse. Modifying livestock management to address unfavorable impacts to certain habitat includes removing livestock from specific areas during the spring to protect adequate nesting cover. Changes in plant species composition, such as the grass/forbs mixture or shrub cover can also modify habitat. Conservation measures in this CCAA include implementation of a grazing strategy and address livestock numbers, grazing timing, intensity, and duration. These factors may need to be adjusted if vegetative trends move away from desired conditions. Conservation measures involving strategic grazing plans [i.e., BLM (1999), Smith Creek Ranch LTD and NRCS (2010), BLM and USFS (2013)] will address livestock management on approximately 1,955 acres of enrolled lands.

## Riparian Habitat (including Wet Meadows and Springs)

Riparian habitat is important as it relates to meadow habitat for greater sage-grouse brood-rearing. This CCAA's conservation measures such as installation of grade stabilization structures and proper livestock grazing will stabilize and improve streambed and bank stability. This reduces sedimentation and can elevate the water table to improve adjacent meadow habitat. In addition, this CCAA addresses willow thinning along irrigation systems to maintain water flow and ditch integrity. Willows will be removed or thinned only in those areas where they are interfering with the irrigation system or where they have encroached into meadow habitat reducing its quantity and quality for greater sage-grouse use. Conservation measures will address approximately 2,600 feet of bank stabilization and removal of about 94 acres of willows.

## Water Development Design

Watering tanks for livestock influence their movement and distribution, increasing livestock access to sagebrush areas (including nesting, brood-rearing, and wintering habitat) while likely benefiting riparian areas by reducing this habitat's use (Connelly *et al.* 2004; Manier *et al.* 2013). Watering tanks can also trap greater sage-grouse which can lead to drowning. Water diversions that dry up springs and associated meadows negatively impact sage-grouse brood-rearing habitat.

Conservation measures include maintaining existing escape ramps and installing them in any new tanks to reduce the potential for direct mortality due to drowning. Conservation measures also include one spring development project which will not capture the entire streamflow at the diversion point but allows water to flow freely with an offsite tank. Any overflow from the tank will be piped back into the stream. If necessary, the spring/riparian habitat will be fenced (and marked) to protect it from trampling by livestock or feral horses. Conservation measures will address approximately 11 acres of spring habitat.

## Fences

Fencing is effective in controlling livestock use of pastures and facilitating herd use on the landscape. This can result in avoiding localized impacts to habitat. Fencing can also degrade and fragment habitat, particularly if maintenance roads occur adjacent to the fence. Fences can provide a corridor for predators, introduce weeds, and contribute to bird collisions.

Conservation measures in this CCAA to reduce or remove these threats include the avoidance of fence construction in important greater sage-grouse habitats including near leks (Stevens *et al.* 2012), and removal of entire fences or portions of fences where no longer needed or where collisions are known to have occurred. Conservation measures also include installation of fence markers to improve the visibility of fences to sage-grouse which reduces or prevents collisions (Christiansen 2009). This CCAA's conservation measures will address approximately 13.7 miles of fencing-related issues on enrolled lands.

## Invasive Plants

Invasive plants impact greater sage-grouse negatively by reducing native vegetation required for food and cover; this also results in habitat loss and fragmentation (FR 75 13909; Manier *et al.*

2013). Effective conservation measures to reduce or remove threats associated with noxious or invasive weed infestations include evaluations to determine the threat and need for treatment, treatments (to be determined in coordination with NRCS and Service) to eradicate known populations of invasive species, and planning and designing control efforts to avoid harming non-targeted species. The prevention and suppression of wild land fire, especially in important sagebrush habitats, also reduces or removes threats associated with noxious or invasive weed infestations as it maintains the existing shrub cover and limits invasions. Other conservation measures include livestock management practices which retain residual cover of native plant species and the immediate restoration of disturbed sites. Approximately 542 acres of invasive plant infestations will be addressed on enrolled lands in this CCAA.

Conservation measures to prevent or suppress wild land fires, particularly those in important greater sage-grouse habitat, include working with NRCS personnel. Restoration activities post-burn (*e.g.*, native seeding/planting, using weed-free seed mixes and mulches, temporarily removing or reducing livestock use) are also important. If important sagebrush stands are burned, reducing habitat quality and quantity, greater sage-grouse use can be adversely affected for many years. Proactive fire planning addresses wild land fire outbreaks and reduces the likelihood of introducing or establishing monocultures of non-natives plant species. Sagebrush restoration after a fire is complicated by invasive exotic annual plant species presence, costs, availability of appropriate seeds, and the difficulty of establishing sagebrush seedlings. The success of these efforts and whether greater sage-grouse use these areas in the future may not be known for decades.

#### Pinyon-Juniper Encroachment

Encroachment of woodland species (*e.g.*, junipers, conifers) into greater sage-grouse habitat can eventually reduce sage-grouse use, or their complete abandonment of these areas as the woodland species result in decreased sagebrush habitat, reduction in grasses and forbs, as well as provides for predator perches (Manier *et al.* 2013).

Conservation measures that include removal of these woodland species may increase available greater sage-grouse habitat or restore previously occupied habitat on enrolled lands (Commons *et al.* 1999; Baruch-Mordo *et al.* 2013). The appropriate treatment method will be determined with NRCS and Service involvement. This CCAA includes the removal of approximately 210 acres of pinyon-juniper woodland.

#### Predation

Human activities can increase local predators in sagebrush habitats which can lead to greater sage-grouse injury and mortality. Predators associated with humans, such as red fox (*Vulpes vulpes*) and corvids, have increased in numbers in sagebrush habitat (Sovada *et al.* 1995, as cited in Manier *et al.* 2013) and are effective predators of nests and juvenile sage grouse (Schroeder *et al.* 1999; Coates *et al.* 2008).

Conservation measures in this CCAA include placing and burying dead animal piles outside of sage-grouse habitats, reducing the availability of other types of supplemental food, targeting

corvid species for removal (Bui *et al.* 2010), and controlling domestic pets in or near important greater sage-grouse habitat. Other conservation measures that address the threat of habitat loss and fragmentation will also reduce the threat of predation. For example, removing fences in greater sage-grouse habitat removes potential perches and travel corridors for predators.

#### Feral Horses

Concentrated feral horse populations can harm plant communities and riparian areas important to greater sage-grouse, reducing both habitat quality and quantity (Connelly *et al.* 2004; Crawford *et al.* 2004). Conservation measures in this CCAA to address this threat include working with BLM personnel to allow horse gathers on non-enrolled ranch lands to remove feral horses to reduce their numbers. This will improve management of enrolled unfenced private lands. Fencing can also be used to prevent their access or to re-distribute their use of particular habitats or areas. This will minimize localized impacts from overgrazing by feral horses, thereby maintaining or improving habitat conditions for greater sage-grouse.

#### Drought

Extended periods of drought can negatively impact habitats important to greater sage-grouse by decreasing herbaceous cover and forb availability (Braun 1998). Implementation of a drought management plan, a component of the grazing strategy for Smith Creek Ranch LTD, can help maintain or reduce potential loss of greater sage-grouse habitat and ultimately increase the survival rates of greater sage-grouse. For example, adjusting livestock use (season, intensity, and/or duration) can reduce adverse impacts on perennial herbaceous cover, plant species diversity, and plant vigor, and increase soil moisture by increasing plant litter. Working with NRCS personnel may identify other options available to further reduce impacts during dry conditions.

#### Haying

Haying operations can injure or kill greater sage-grouse as well as eliminate cover for the species. Recognizing the use of these areas by greater sage-grouse and adjusting cutting times and cutting patterns can eliminate or reduce these negative impacts.

Conservation measures in this CCAA will delay haying until after early to mid-June to avoid the nesting period and until mid-morning to 6 p.m. at night when most birds have moved elsewhere. Haying will also occur in a pattern that allows for birds to escape to adjacent fields to eliminate or reduce injury and death to greater sage-grouse adults and young. Approximately 169 acres of haylands will be cut following these conservation measures under this CCAA.

#### Planting of Rangeland/Pastureland with Crops

Rangeland and pastureland need to be replanted periodically as production decreases over time. In the enrolled area, replanting generally occurs every 7 years. Loss of these areas during planting can impact sage-grouse use of this habitat.

Conservation measures that will reduce this impact include rotating fields so that only one field is replanted in any given year leaving the other fields available for sage-grouse use. Additionally, certain fields (two fields totaling 77 acres) will be planted with legumes and other forage and cover vegetation for greater sage-grouse. The goal is to achieve a composition rate between 5 and 15 percent in each of the two fields.

This CCAA addresses the threats to the greater sage-grouse under most of the five factors upon which the Service would base a future ESA listing decision. Conservation measures include commitments to protect and enhance habitat, which is likely the single greatest threat to the greater sage-grouse. Conservation measures also include commitments to reduce direct mortality. Conservation measures apply to almost all of the lands enrolled in this CCAA. If landowners within the range of the species participate and provide conservation measures similar to those in this CCAA such as habitat enhancement, and reduction or elimination of accidental injury or mortality, a substantial conservation benefit would be realized for the species. This CCAA is expected to result in a larger number and greater use of Smith Creek Ranch LTD by greater sage-grouse than occurs currently. As required by the CCAA standard, if conservation measures were implemented on all necessary properties, the Service believes that the need to list the greater sage-grouse would likely be precluded or removed.

### **Level of Incidental Take**

Current regulations authorize the issuance of permits for otherwise prohibited activities (*e.g.*, take, import, export, interstate and foreign commerce) in order to enhance the propagation or survival of a listed species. For CCAAs, the respective policy (64 FR 32726) and regulations (50 CFR 17.22(c) and 17.32(c)) provide the associated Enhancement of Survival permits under section 10(a)(1)(A) of the ESA to authorize incidental take.

The Service identified habitat loss, fragmentation, and degradation as the primary causes of greater sage-grouse declines (75 FR 13909). The protection of existing greater sage-grouse habitat in addition to restoration of degraded habitat is important to the continued existence of the species in Nevada.

The conservation measures identified in this CCAA are expected to maintain and enhance greater sage-grouse habitat on enrolled lands and limit adverse impacts to the species. Several conservation measures address the potential sources of mortality, injury, and other forms of take through loss or degradation of habitat. As a result, minimal incidental take due to the proper implementation of the conservation measures and normal ranching operations maintaining a healthy sagebrush ecosystem is expected.

Should the greater sage-grouse be listed under the ESA, authorization for incidental take under the section 10 Enhancement of Survival permit is limited to agricultural-related (livestock grazing, ranch and farming equipment operation, and limited non-hunting-related recreational activities) activities and implementation of the conservation measures indicated in this CCAA on the Smith Creek Ranch LTD enrolled lands. The implementation of the CCAA is intended to avoid and minimize the sources of incidental take from these types of activities and reduce the threats to the species.

It is expected that the majority of incidental take will be in the form of harassment or death during haying and mowing, collision with fences or due to other ranch infrastructure, fragmentation of intact sagebrush landscapes, and non-hunting related recreational activities. Little information is available regarding incidental mortalities of greater sage-grouse from ranching operations. The number of greater sage-grouse that will be taken cannot be determined precisely; however, we have determined that an estimated 10 greater sage-grouse may be taken each year on the enrolled lands in the form of death or injury.

Incidental take could occur as a result of grazing or brush management practices that are a source of greater sage-grouse mortality (*e.g.*, collisions with barbed-wire fences, destruction of nests, loss of eggs). Some direct impacts or take (*e.g.*, destruction of nests or loss of eggs) could occur from agricultural operations (*e.g.*, machinery operations such as haying, baling, and herding of livestock) or enhancement of rangeland to other agricultural practices (*e.g.*, forage production). Some direct impacts or take could occur from non-hunting recreational activities (*e.g.*, ATV/OHV travel destroying nests or colliding with individuals).

Incidental take could also occur as a result of grazing or brush management practices that modify suitable habitat to an extent that impairs or eliminates successful reproductive and recruitment activities by greater sage-grouse (*e.g.*, grazing intensity to a degree that reduces or eliminates adequate nesting cover for the greater sage-grouse). Most of these impacts are expected to be limited and sporadic in nature. All greater sage-grouse present on the enrolled lands may be taken in the form of harassment.

Conservation benefits for the greater sage-grouse under this CCAA will likely accumulate well beyond the duration of the conservation period especially from habitat enhancement and protection measures. This should result in reduced impacts and incidental take of the greater sage-grouse. Though impacts and incidental take are expected to occur, impacts are not expected to be great enough to compromise the viability of greater sage-grouse populations in the area. Overall, due to the habitat protection and enhancement provided under the CCAA on enrolled lands, the long-term conservation of greater sage-grouse on Smith Creek Ranch is expected to be improved by implementation of this CCAA even with authorization of some incidental take under the Enhancement of Survival permit.

#### Adverse Impacts Not Rising to the Level of Take

Disturbance of some individual greater sage-grouse may occasionally occur during livestock feeding, calving, livestock herding, and from recreational activities (*e.g.*, camping, hiking, horseback riding, ATV/OHV riding on and off established roads, and legal hunting of other game species). These effects are expected to occur rarely and will likely result in greater sage-grouse being flushed a short distance. This will not likely adversely affect the fitness or survivability of these individual birds.

#### How Take May Affect the Greater Sage-grouse

Incidental take of greater sage-grouse related to ranching operations is often related to habitat fragmentation. A few conservation measures address fragmentation, including those regarding

maintenance of contiguous habitat. Greater sage-grouse mortality may occur during haying operations and a conservation measure regarding the date, timing, and method of haying is designed to reduce this risk. Greater sage-grouse mortality may occur on occasion from collisions with fences, and conservation measures are designed to reduce this risk. Mortality from collisions with fences is anticipated to occur infrequently with the implementation of the conservation measures.

The small level of incidental take anticipated from these activities is offset by the various conservation measures. This CCAA will provide a net conservation benefit to the greater sage-grouse.

### **Incidental Take Permit and “No Surprises” Policy**

Upon approval of the CCAA, and satisfaction of all other applicable legal requirements, the Service will issue a permit, in accordance with section 10(a)(1)(A) of the ESA, to Smith Creek Ranch LTD authorizing incidental take of greater sage-grouse, as a result of land use activities on the enrolled lands in a manner described in this CCAA. The permit will authorize incidental take resulting from Smith Creek Ranch LTD’s otherwise-lawful activities that are described in the CCAA. These activities may include: agricultural-related activities (livestock grazing, ranch and farming equipment operation, and limited recreational activities). The Service will then provide Smith Creek Ranch LTD the ESA regulatory assurances found at 50 CFR §§17.22(d)(5), 17.32(d)(5).

Consistent with the Service’s Candidate Conservation Agreement with Assurances Final Policy (64 FR 32726), conservation measures and land, water, or resource use restrictions in addition to the measures and restrictions described in this CCAA will not be imposed with respect to agricultural activities on enrolled land should greater sage-grouse become listed under the ESA in the future. These assurances are authorized by the Enhancement of Survival permit issued under section 10(a)(1)(A) of the ESA for the enrolled lands identified in the CCAA. In the event of unforeseen circumstances, the Service will not require the commitment of additional land, water, or other natural resources beyond the level otherwise agreed to for the species in this CCAA without the consent of Smith Creek Ranch LTD. The permit will authorize Smith Creek Ranch LTD to incidentally take greater sage-grouse as long as such take is consistent with this CCAA and the permit.

Changed circumstances are those factors that negatively affect greater sage-grouse and that can reasonably be anticipated and planned for under the CCAA. Wildfires occur throughout the area of the enrolled lands, and in some cases could have a negative effect on greater sage-grouse. Due to the variation in possible effects to the species and necessary conservation measures, it is not possible to identify specific measures to address wildfires at this time. During the term of the CCAA and permit, should a wildfire occur at any greater sage-grouse-occupied site, Smith Creek Ranch LTD, the Service, and NRCS will work in good faith to develop and implement conservation measures to minimize post-fire effects to greater sage-grouse. Please also see the conservation measures and discussion to prevent or suppress wild land fires under the Invasive Plants paragraph above.

## **Assurances Provided**

The Service provides assurances through individual CCAAs with non-Federal property owners and the associated section 10(a)(1)(A) permits. If the greater sage-grouse is listed, no additional conservation measures or land, water, or resource use restrictions, beyond those voluntarily agreed to will be required as long as the enrolled landowner is in full compliance with the CCAA and section 10(a)(1)(A) permit. These assurances will be authorized with the issuance of the Enhancement of Survival permit under section 10(a)(1)(A) of the ESA. If all permit issuance criteria are met in accordance with 50 CFR §§ 17.22(d)(2) and 17.32(d)(2), the Service would issue a permit to authorize incidental take associated with the following covered activities.

1. Livestock operations—including grazing of forage, herding of cattle, calving, branding, feeding of hay and dietary supplements, accessing water or the development of water sources, predator control by employees, gathering and shipping of cattle, disposal of dead animals, fencing projects, and general animal husbandry practices.
2. Farming operations—including plowing, cultivating, or harvesting of pastures and hay fields, irrigating, clearing or burning of ditch banks and fields, weed control within fields, fertilization, brush thinning and willow thinning as needed, and harvesting and storing of hay or other products, and maintenance of houses, outbuildings, fences, and corrals.
3. Recreation—including legal fishing and hunting. Hunting signs (access allowed with permission) have been posted on the fenced portions of the ranch. Other occasional activities include camping, horseback riding, ATV/OHV use on and off trails, and hiking.

Take resulting from mineral (surface or subsurface), oil and gas, wind, solar power, or geothermal activities and their associated road, fence, or transmission line development will not be authorized under this individual CCAA or section 10(a)(1)(A) permit because this CCAA does not address the significant threats of these types of activities to the greater sage-grouse. In addition, consistent with Service policy, incidental take of greater sage-grouse as a result of any chemical use would not be authorized under the permit.

## **Assurances Provided to Enrolled Landowner in Case of Changed or Unforeseen Circumstances**

“Changed circumstances” are those changes in circumstances that can reasonably be anticipated and planned for on the enrolled property. “Unforeseen circumstances” are those circumstances affecting a covered species that could not reasonably have been anticipated by the applicant and the Service at the time of the CCAA’s negotiation and development and that result in a substantial adverse change in the status of the covered species.

The assurances listed below apply to the enrolled landowner with an Enhancement of Survival permit associated with this CCAA, where the CCAA is being properly implemented. The assurances apply only with respect to greater sage-grouse and only to ranch management activities.

### Changed Circumstances Provided for in the CCAA

The impacts of various factors such as drought or wildfire are addressed broadly by conservation measures in this CCAA. If circumstances occur eliminating a substantial amount of greater sage-grouse habitat on the property covered by this CCAA, the enrolled landowner, NRCS, and the Service will meet and a review of the changes and their impact on habitats, or the ability of habitats to reduce the impact will be made. A re-evaluation of the conservation measures (including activities such as seeding and invasive weed control) planned for the affected area will be made and potential actions identified to address the changed circumstances. If this review results in a conclusion that additional conservation measures are needed, the parties will take an adaptive management approach and address the change by minor amendment to the conservation measures (including the implementation schedule), or take other actions as permitted within the CCAA to maximize the likelihood of success.

Potential factors resulting in changed circumstances include drought, wildfire, and climate change. These factors are described below.

**Drought:** Variation in precipitation is common throughout greater sage-grouse range. Annual rangeland monitoring and conservation measures on enrolled lands are expected to address minor year to year variations in precipitation. However, prolonged droughts (defined in this CCAA as 3 years or more) in important greater sage-grouse habitats may create conditions reducing seasonally available habitat beyond normal annual variation and causing changed circumstances on the landscape. This could include vegetative die-off or poor production of invertebrates. In the event of prolonged drought, the parties will meet and evaluate the drought conditions. If appropriate, conservation measures specific to situations of prolonged drought will be utilized to address local conditions. It will be determined if current livestock grazing practices should be temporarily modified. Conservation measures the enrolled landowner may use to address drought conditions include, but are not limited to: (1) Grazing rest, deferment, rotation, or other management changes designed to retain residual and live vegetation; (2) development of grass banks for use during drought conditions; (3) development of additional water sources for livestock and greater sage-grouse; and (4) other vegetation management to minimize additive impacts.

**Wildfire:** There is a potential for wildfire throughout greater sage-grouse range, particularly during periods of drought. Fire can eliminate greater sagebrush habitat and increase the likelihood of establishment of invasive plants. In the event of wildfire, the parties will meet and evaluate the impact of the fire on the enrolled lands to determine if additional conservation measures are needed. Conservation measures the enrolled landowner may use to address impacts from wildfire include, but are not limited to: (1) Implementation of restoration projects; (2) rest from livestock use; (3) removal of invasive plants; and (4) working with NRCS specialists to address specific issues (*e.g.*, erosion).

**Climate Change:** It is predicted that climate change will result in changes to temperature, precipitation, and carbon dioxide levels in the Great Basin (Neilson *et al.* 2005, Chambers and Pellant 2008). These changes are predicted to result in increases in wildfires and invasive plant species and their interactions (Smith *et al.* 2000, Chambers *et al.* 2008, Miller *et al.* 2011). While current climate models are not available at small scales (*i.e.*, Smith Creek Ranch LTD), it

is wise to consider the potential impacts of climate change during the timeframe of this CCAA. Because the primary concerns with climate change relate to drought and wildfire, the Service considers appropriate actions to address changed circumstances associated with climate change are sufficiently considered above.

#### Changed Circumstances Not Provided for in the CCAA

If additional conservation measures are necessary to respond to changed circumstances, the Service will not require any conservation and mitigation measures in addition to those provided for in the CCAA without the consent of the enrolled landowner, provided the CCAA is being properly implemented.

#### Reevaluation of Status of the Covered Species

If during the duration of this CCAA and permit, the Service determines that there has been a marked decline (based on vegetation data) in the covered species' suitable habitat, using the best scientific and commercial data available, the parties agree to reevaluate the conservation measures discussed above. If such reevaluation concludes a need to change the conservation measures because they are not achieving the desired outcome (maintaining or increasing suitable habitat and maintaining or increasing greater sage-grouse number), the applicant agrees to either implement new or additional conservation measures regardless of the assurances provided in the CCAA above or to terminate this CCAA and surrender the permit subject to the Permit Suspension or Revocation section below.

#### Unforeseen Circumstances

Additional conservation measures will not require the commitment of additional land resources, water resources, financial compensation, or additional restrictions on the use of land, water, or other natural resources, beyond the level otherwise agreed upon, without the consent of the enrolled landowner. The Service will have the burden of demonstrating unforeseen circumstances exist, using the best scientific and commercial data available. These findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the greater sage-grouse. The Service will consider, but not be limited to, the following factors:

- (1) Size of the current range of the greater sage-grouse;
- (2) Percentage of range adversely affected by the CCAA;
- (3) Percentage of range conserved by the CCAA;
- (4) Ecological significance of the portion of the range affected by the CCAA;
- (5) Level of knowledge about the greater sage-grouse and the degree of specificity of the species' conservation program under the CCAA; and
- (6) Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of greater sage-grouse in the wild.

An adaptive, outcome-based approach will be used to allow management flexibility, recognizing conservation measures may need updating based on changing conditions or new information. Such an adaptive approach explicitly recognizes multiple factors (environmental conditions, biological processes) affect greater sage-grouse populations. Furthermore, the consequences of prescriptive conservation measures cannot be predicted with certainty. Therefore, the CCAA provides a framework for making objective decisions in the face of uncertainty. If the expected results of a conservation measure are not achieved, the conservation measure is either modified or an alternative conservation measure is undertaken in order to achieve the expected results. Adaptive management relies on an iterative cycle of monitoring, assessment, and decision making to clarify the relationships among the conservation measures and the response of habitat and, ultimately, greater sage-grouse abundance.

### **Monitoring Provisions**

Smith Creek Ranch LTD will have the primary responsibility for conducting biological monitoring efforts for this CCAA; however, it may be possible that the Service, in addition to conducting compliance monitoring, will be available to assist with biological monitoring efforts, if funding and time allow.

There are several components of the monitoring program which include:

- (1) Compliance monitoring, which includes:
  - a. Annual self-reporting by Smith Creek Ranch LTD of various conservation measures as indicated in Tables 3 and 4, and Appendix E, and
  - b. An annual compliance evaluation visit conducted by the Service to verify that agreed-upon conservation measures have been followed or implemented according to schedule.
  
- (2) Biological monitoring, which includes:
  - a. Assessment by Smith Creek Ranch LTD of various conservation measures as indicated in Tables 3 and 4, and Appendix E,
  - b. Annual greater sage-grouse habitat monitoring (Appendix D) of selected fields conducted by Smith Creek Ranch LTD ,
  - c. Periodic greater sage-grouse habitat monitoring (Appendix D) of selected fields and of various conservation measures conducted by Smith Creek Ranch LTD, and
  - d. Annual greater sage-grouse observational monitoring conducted by Smith Creek Ranch LTD.

The results of monitoring efforts will be considered from an adaptive management perspective. Many of the conservation measures have been previously successfully implemented as part of other conservation efforts. However, outcomes of some conservation measures may vary based upon local site conditions. Specifically, conservation measures with a vegetation maintenance, restoration, or enhancement component may have varying success based upon local soil type and climatic conditions such as rainfall timing and amount. For these conservation measures, monitoring both before and after implementation, along with the flexibility provided through adaptive management, will maximize the likelihood of success through possible changes to timing of reclamation or enhancement efforts, timing of treatments, seed mixtures, and other adjustments.

## **Compliance Monitoring**

The enrolled landowner (Smith Creek Ranch LTD) is responsible for annual compliance monitoring and annual reporting specified herein (Tables 3 and 4, and Appendix E) related to implementation of this CCAA and fulfillment of its provisions, including implementation of agreed-upon conservation measures and take authorized by the permit. Compliance monitoring will require information on which conservation measures were implemented, when (date) and where (field) the conservation measures were implemented, acres or linear distance treated, how the treatment was performed, the habitat's response, and whether any take of greater sage-grouse occurred.

This compliance monitoring information will be:

1. compiled by Smith Creek Ranch LTD, and
2. provided to the Service by December 31 of each year.

The Service will visit Smith Creek Ranch each year to ascertain compliance with the CCAA. The Service, after reasonable prior notice to the enrolled landowner, may enter the enrolled lands to ascertain compliance with the CCAA. Reasonable prior notice is notice given at least 2 weeks in advance of a visit. In addition, at least 48 hours in advance the landowner and the Service will determine a specific time, location to meet, and indicate names of Service personnel entering the property for compliance monitoring purposes.

This compliance monitoring visit will occur:

1. by the Service, and
2. in early fall, by October 15 of each year.

## **Biological Monitoring**

Ranch management and grazing practices currently employed by the landowner have resulted in: (1) Property that contains suitable greater sage-grouse habitat which is currently being maintained; and (2) other property where habitat occurs but for which there exists an opportunity to restore and enhance habitat through the implementation of conservation measures included in this CCAA.

Smith Creek Ranch LTD will conduct monitoring based on the type of habitat existing on the enrolled property at the time of application. Monitoring of property (containing suitable habitat) for greater sage-grouse currently being maintained by existing grazing or ranch management practices will consist of verifying, through annual reporting to the Service, the continued implementation of agreed-upon conservation measures.

In addition, monitoring of property which provides greater sage-grouse habitat, but for which there is opportunity to improve it through implementation of conservation measures will be monitored based on the three main seasonal habitats important to greater sage-grouse:

(1) Nesting and early brood-rearing, (2) late brood-rearing, and (3) fall and winter (Connelly *et al.* 2000).

Biological monitoring will focus on annual and periodic evaluations of these three habitat types where conservation measures are being implemented (Tables 3 and 4, and Appendix E).

The following monitoring methods will provide information to understand the effects of the conservation measures and report outcomes as they relate to greater sage-grouse.

1. Photo Points – Permanent photo points will be established in each field. Photos will be taken when conservation measures are installed. The purpose of the photos is to visually document habitat change or trends over time.
2. NRCS's Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (2010) – Four monitoring techniques have been used as a protocol for inventory and long-term monitoring of greater sage-grouse habitat (Appendix D). NRCS's Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (2010) will be conducted in fields where conservation measures are implemented. The fields will be monitored initially before conservation measures are implemented and annually or periodically as indicated in Tables 3 and 4, and Appendix E. The four techniques include: a) Sagebrush Canopy Cover by Species to measure sagebrush canopy cover; b) Line Point Intercept to measure cover of plant species along with bare ground, rock, litter, and biotic crust providing plant composition; c) Plant Height to measure plant height of woody and herbaceous species and quantifies changes in vegetation structure; and d) Canopy Gaps to measure the amount of gaps of vegetation and provides an indicator of change in canopy cover.

The permanent photo point(s) and vegetation transect number and location(s) established to assist in biological monitoring will be determined by Smith Creek Ranch LTD, NRCS, and the Service for the various fields. Because habitat conditions tend to change slowly, habitat monitoring will not be conducted annually in all fields for all conservation measures. Fields will be monitored prior to implementing conservation measures and then annually or periodically as indicated in Tables 3 and 4, and Appendix E. Smith Creek Ranch LTD will be responsible for taking photographs and maintaining them (with labeling), either as hard copies or electronically. Habitat monitoring will be conducted by Smith Creek Ranch LTD with assistance from NRCS using the procedures outlined in NRCS's Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (NRCS 2010) (Appendix D), and the plant list from the Species Habitat Evaluation for the Greater Sage Grouse in Nevada worksheet (NRCS 2007) (Appendix F). Smith Creek Ranch LTD will be responsible for maintaining the habitat monitoring data. Smith Creek Ranch LTD will summarize the data annually as appropriate as well as provide the completed data sheets to the Service. In Appendix E, when Sage Grouse Protocol is indicated it means both Appendix D and F are to be used.

Some periodic evaluations will occur after the individual conservation measure is fully implemented (*i.e.*, if 30 acres are being treated over several years it is not evaluated until all 30 acres are treated, then periodically after that). Fourteen of the 22 fields (Big Reservoir, Fish Pond, Leo's Pasture, Horse, Swamp, Rock, Haystack, Lower Meadow, Brush, BB Unfenced HQ South, Smith Creek, Upper Billie Canyon, Lower Edwards Creek, and Upper Edwards Creek) were selected for annual greater sage-grouse habitat monitoring based on the land use type, period of use by livestock, period of greater sage-grouse use, acreage, and conservation measures to be implemented. This is an attempt to evaluate a sample of various fields with their conservation measures in the enrolled lands. The 14 fields selected result in approximately 64

percent (14/22) of the fields and about 59 percent (1,301/2,201) of the enrolled acreage being monitored annually over the life of the CCAA. The remaining eight fields (Mares Pasture, Raising Pond, South Rock, Derrick, Billie Canyon, CC Unfenced HQ North, Edwards Creek, Topia) and their acreage will be monitored less often (10 year intervals) (Appendix E). However, all of the 22 enrolled fields will be monitored annually for invasive plant species. There is no set protocol for monitoring invasive plant species, but Smith Creek Ranch LTD will report annually the survey date, field name, treatment to be applied, and observed estimated acreage of invasive species (listing primary invasive species) needing treatment.

The Service will evaluate the data collected and provided by Smith Creek Ranch LTD by comparing it with information of preferred greater sage-grouse habitat uses (Connelly *et al.* 2000) as indicated in Appendix G to determine if greater sage-grouse habitat is being maintained or enhanced for these habitats on the enrolled lands. The Service may also use the entire worksheet for the Species Habitat Evaluation for the Greater Sage Grouse in Nevada (NRCS 2007) (Appendix H) to determine if greater sage-grouse habitat is being maintained or enhanced on the enrolled lands. Information from other sources related to greater sage-grouse habitat needs such as Hagen *et al.* (2007) and BLM and USFS (2013) or information developed in the future may also be reviewed, as appropriate. If there is a marked decline of a specific, suitable habitat type on the enrolled lands, the Service and Smith Creek Ranch LTD may reevaluate implemented conservation measures and make adjustments through adaptive management processes.

Smith Creek Ranch LTD will also record information (presence/absence), through observation, of greater sage-grouse field use (any enrolled field) during May 1 through December 31 (Appendix I). During the late brood-rearing season (July 1 to September 1), Smith Creek Ranch LTD will also observe and record the number of hens and chicks seen on any enrolled field (Appendix I). While this information does not provide a population estimate, it will provide a coarse indication of greater sage-grouse productivity on and use of the enrolled property.

Lastly, Smith Creek Range LTD will collect greater sage-grouse data from any hunters that receive permission to hunt on their enrolled lands, if possible. This data will include the date and number of birds taken (by gender if possible) (Appendix J).

Smith Creek Ranch LTD biological monitoring includes:

1. Providing an annual compliance self-reporting of the implemented conservation measures to the Service per Tables 3 and 4, and Appendix E.
2. Reporting annual or periodic biological monitoring of the implemented conservation measures to the Service based on NRCS's Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (NRCS 2010; Appendix D), and the plant list from the Species Habitat Evaluation for the Greater Sage Grouse in Nevada (NRCS 2007; Appendix F) and per Tables 3 and 4, and Appendix E.
3. Recording dates, locations (by field name), and numbers of greater sage-grouse observed on Smith Creek Ranch LTD and include information in the annual report (Appendix I).
4. Collecting greater sage-grouse data from any hunters, if possible (Appendix J).

5. Reporting all observed mortalities (regardless of cause) of greater sage-grouse to the Service within 5 days (Appendix K).
6. Compiling and providing information from these monitoring efforts in a written report to the Service by December 31 of each year.

NRCS biological monitoring includes:

1. Preparing and providing a map of each enrolled field to assist with documenting location of photo points and vegetation transects as requested from Smith Creek Range LTD.
2. Assisting Smith Creek Range LTD in determining number and location of photo points and vegetation transects on each field.
3. Providing data sheets for NRCS's Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative (NRCS 2010; Appendix D).
4. Assisting/consulting with Smith Creek Ranch LTD in conducting annual and periodic biological monitoring as time and funding allow.

Service biological monitoring includes:

1. Assisting in determining number and location of photo points and vegetation transects on each field.
2. Assisting in biological monitoring if funding and time allow.
3. Evaluating and comparing the collected biological monitoring data to information for the three preferred greater sage-grouse habitat types (Connelly *et al.* 2000) (Appendix G) as well as available local information to determine if greater sage-grouse habitat is being maintained and enhanced on the enrolled lands.

The Service will consider conservation measures and their expected benefits as successfully implemented if the enrolled lands continue to meet (or meet during the CCAA timeframe) the selected minimum seasonal habitat requirements for greater sage-grouse for the three preferred habitat types (nesting, brood-rearing, winter) based on Connelly *et al.* (2000) as well as other more locally available information obtained from appropriate sources to allow for variability due to environmental or other factors. The Service will also consider conservation measures and their expected benefits as being successfully implemented if observed greater sage-grouse numbers appear to be stable or increasing during the CCAA timeframe, allowing for variability due to environmental or other factors.

### **Notification of Take Requirement**

By signature on this CCAA, Smith Creek Ranch LTD agrees to provide the Service with an opportunity to rescue individuals of the covered species before any authorized take occurs. Notification of take must be provided to the Service at least 30 days prior to the action.

## **Duration of the Agreement and Permit**

This CCAA will have a duration of 20 years from the date the CCAA is signed by Smith Creek Ranch LTD and the Service; and may be renewed before it expires. This duration is based on the approximate time to fully implement some of the conservation measures and provide sufficient time for their benefits to be achieved as well as to allow for addressing the habitat needs of the greater sage-grouse. The CCAA will cover Smith Creek Ranch LTD from the date their lands are enrolled until the end of their participation in this CCAA, either through expiration or termination. Should the greater sage-grouse be listed as threatened or endangered, and all other requirements are met, the Enhancement of Survival permit will be issued and Smith Creek Ranch LTD will be covered from that date until the end of their participation in this CCAA either through expiration or termination. The duration of participation will be at least 5 years, but can be the full duration of the CCAA. Participation is also renewable with the original conservation commitment, as identified by Smith Creek Ranch LTD. Conservation lands will be maintained as suitable greater sage-grouse habitat for the duration of participation and for as long as Smith Creek Ranch LTD desires coverage by the section 10(a)(1)(A) Enhancement of Survival permit.

Coverage under the permit will apply only to the landowner with enrolled lands under this CCAA prior to any future effective ESA listing date of the greater sage-grouse. The permit coverage is for incidental take associated with the landowner's ongoing land uses that occurred during participation and implementation of conservation on enrolled properties, as long as the conservation agreed upon is being implemented. Any incidental take of greater sage-grouse resulting from a change in land use that diminishes that conservation lands suitability for greater sage-grouse will not be covered by the section 10(a)(1)(A) Enhancement of Survival permit.

## **Adaptive Management**

Adaptive management allows for mutually agreed upon changes to the CCAA conservation measures in response to changing conditions or new information. If the conservation measures do not yield the expected results or appear ineffective, then management activities can be changed or alternative activities can be undertaken to achieve those expected results. This CCAA will need to respond to specific management opportunities and needs as they arise, and unforeseen conditions such as drought which may independently impact greater sage-grouse populations or habitats. The CCAA, therefore, includes an adaptive management approach to ensure flexibility and recent scientific information is used. Decisions related to adaptive management will be based primarily on evaluations of compliance and biological monitoring results provided in the annual reports.

The need to incorporate adaptive management modifications into the CCAA may result from three potential sources: (1) New scientific information concerning the biology or population dynamics of the greater sage-grouse; (2) new scientific information concerning the effects of other biotic or abiotic factors on the greater sage-grouse; and (3) information derived from the CCAA monitoring program.

Adaptive measures to better meet the conservation needs of the greater sage-grouse may be proposed by either the Service or Smith Creek Ranch LTD at any time as deemed necessary. Implementation of adaptive measures would occur upon written agreement between the two parties.

## **Modification of the Agreement**

Smith Creek Ranch LTD or the Service may propose modifications to this CCAA by providing written notice to the other participating party. Such notice shall include a statement of the proposed modification, the reason for it, and its expected results. The parties will use their best efforts to respond to proposed modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon the other parties' written approval and completion of any necessary environmental analysis as required by the National Environmental Policy Act (NEPA) or ESA.

## **Amendment of the Permit**

The permit issued under this CCAA may be amended in accordance with all applicable legal requirements, including but not limited to the ESA, NEPA, and the Service's permit regulations. The party proposing the amendment shall provide a statement of the proposed amendment and the reasons for the amendment. The amendment procedure cannot be used to impose additional conservation measures or use restrictions without the consent of Smith Creek Ranch LTD.

In order to facilitate an effective amendment process, the parties to the CCAA agree to a set of amendment stipulations including: (1) Notification to ensure all participating parties are provided any proposed amendments, and (2) an opportunity for all participating parties to review and respond to any proposed amendments. For each proposed amendment, the Service must determine whether the proposed amendment of the Enhancement of Survival permit results in a minor change or a major modification of the CCAA resulting in outcomes significantly different from those analyzed for the original agreement.

Minor amendments involve routine administrative revisions or changes to the operation and management program associated with the CCAA, and may or may not alter the conditions of the permit. Minor amendments do not include the addition or alteration of conservation measures. Upon the written request of one of the parties to the CCAA, the Service can approve minor amendments to the CCAA if the amendment does not conflict with the purpose of the CCAA or result in some material change to the Service's analyses (*i.e.*, with respect to meeting the CCAA standard, the amount of take authorized, the section 7 determination, or the NEPA decision). These minor amendments do not require a formal amendment process, but do require written documentation that participating parties approved the amendment prior to it becoming effective. For example, a minor amendment might include a change in monitoring or reporting protocols based upon recommendations from new research.

A major amendment would either (1) result in a different level or type of take than was analyzed in association with the CCAA or (2) result in a change to the cumulative conservation benefits to the covered species such that the CCAA standard might not be met. Major amendments are likely subject to the procedural requirements of Federal laws and regulations, such as NEPA, and to require additional analysis by the Service, public notification in the Federal Register, and a formal CCAA amendment process. For example, a major amendment might include a proposal to use a pesticide in greater sage-grouse habitat not specified in the CCAA.

## **Termination of the CCAA**

As provided for in the draft CCAA Handbook (Service 2003), Smith Creek Ranch LTD may terminate implementation of the CCAA's voluntary management actions prior to the CCAA's expiration date for good cause or any other reason, even if the expected benefits have not been realized. If Smith Creek Ranch LTD is unable or unwilling to continue implementation of the plans and stipulations of the CCAA, Smith Creek Ranch LTD must relinquish the permit to the Service. Smith Creek Ranch LTD may terminate the CCAA with 30 days prior written notice to the Service. The Service should be provided an opportunity to relocate affected species within 48 hours of that notice.

## **Permit Suspension or Revocation**

An Enhancement of Survival permit may not be revoked for any reason except those set forth in 50 CFR 13.28(a)(1) through (4):

- (1) The permittee willfully violates any Federal or State statute or regulation, or any Indian tribal law or regulation, or any law or regulation of any foreign country, which involves a violation of the conditions of the permit or of the laws or regulations governing the permitted activity; or
- (2) The permittee fails within 60 days to correct deficiencies that were the cause of a permit suspension; or
- (3) The permittee becomes disqualified; or
- (4) A change occurs in the statute or regulation authorizing the permit that prohibits the continuation of a permit issued by Service; or
- (5) Unless continuation of the permitted activity would appreciably reduce the likelihood of survival and recovery in the wild of any species.

These provisions allow the Service to revoke a properly implemented CCAA and Enhancement of Survival permit as a last resort in the narrow and unlikely situation in which an unforeseen circumstance results in likely jeopardy to the greater sage-grouse, and then only if the Service and Smith Creek Ranch LTD have not been successful in remedying the situation through other means.

## **Remedies**

Either party shall have all remedies otherwise available to enforce the terms of this CCAA and the permit, except that no party shall be liable in damages for any breach of this CCAA, any performance or failure to perform an obligation under this CCAA, or any other cause of action arising from this CCAA.

## **Dispute Resolution**

The participating parties recognize disputes concerning implementation of, compliance with, or termination of the CCAA or Enhancement of Survival permit may arise from time to time. The

participating parties agree to work together in good faith to resolve such disputes, using the informal dispute resolution procedures set forth in this section, or such other procedures upon which the parties may later agree. However, if at any time any party determines circumstances so warrant, it may seek any available remedy without waiting to complete informal dispute resolution.

Informal dispute resolution process – Unless the parties agree upon another dispute resolution process, or unless an aggrieved party has initiated administrative proceedings or suit in Federal court as provided in this section, the parties may use the following process to attempt to resolve disputes:

- (1) The aggrieved party will notify the other parties of the provision potentially violated, the basis for contending a violation has occurred, and the remedies it proposes to correct the alleged violation.
- (2) The party alleged in violation will have 30 days, or such other time as may be agreed, to respond. During this time it may seek clarification of the information provided in the initial notice. The aggrieved party will use its best efforts to provide any available information responsive to such inquiries.
- (3) Within 30 days after such response was provided or was due, representatives of the parties having authority to resolve the dispute will meet and negotiate in good faith toward a solution satisfactory to all parties, or will establish a specific process and timetable to seek such a solution.
- (4) If any issues cannot be resolved through such negotiations, the parties will consider non-binding mediation and other alternative dispute resolution processes and, if a dispute resolution process is agreed upon, will make good faith efforts to resolve all remaining issues through that process.

### **Succession and Transfer**

This CCAA shall be binding on and shall inure to the benefit of the enrolled landowner and his respective successors and transferees, in accordance with applicable regulations (currently codified at 50 CFR 13.24 and 13.25). A new landowner has a choice of whether to enroll or not. The Enhancement of Survival permit issued to the enrolled landowner will be extended to the new landowner if they choose to enroll. As a party to the original CCAA and permit, the new landowner will have the same rights and obligations with respect to the enrolled property as the original owner. The new landowner will have the option of receiving CCAA assurances by signing a new CCAA and receiving a new permit. The enrolled landowner shall notify the Service of any transfer of ownership, so that the Service can attempt to contact the new landowner, explain the baseline responsibilities applicable to the property, and seek to interest the new landowner in signing the existing CCAA or a new one to benefit greater sage-grouse on the property. Assignment or transfer of the permit shall be governed by Service regulations in force at the time. If a new landowner chooses not to enroll, the permit authorizations and assurances will cease.

### **Availability of Funds**

The responsibilities of each party under this CCAA will be funded by each respective party's resources. The enrolled landowner will provide private funding and in-kind services to the extent possible. Implementation of conservation measures may also be funded through various programs such as State Wildlife Grants, Landowner Incentive Programs, Partners for Fish and Wildlife, Private Stewardship Grants, Farm Bill, or others. Each party's responsibility under this CCAA is subject to, and contingent upon, appropriations and allocations of funds for this purpose.

Implementation of this CCAA is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. Nothing in this CCAA will be construed by the parties to require the obligation, appropriation, or expenditure of any funds from the U.S. Treasury. The parties acknowledge that the Service will not be required under this CCAA to expend any Federal agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

### **Relationship to Authorities**

The terms of this CCAA shall be governed by and construed in accordance with applicable Federal law. Nothing in this CCAA is intended to limit the authority of the Service to fulfill its responsibilities under Federal laws. All activities undertaken pursuant to this CCAA or the permit must be in compliance with all applicable State and Federal laws and regulations.

### **No Third-Party Beneficiaries**

This CCAA does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this CCAA to maintain a suit for personal injuries or damages pursuant to the provisions of this CCAA. The duties, obligations, and responsibilities of the parties to this CCAA with respect to third parties shall remain as imposed under existing law.

### **Reports**

Any reports, including monitoring and annual reports, required by this CCAA shall be delivered to the person listed below by December 31 of each year:

State Supervisor, Nevada Fish and Wildlife Office  
U.S. Fish and Wildlife Service  
1340 Financial Boulevard, Suite 234,  
Reno, Nevada 89502-7147

**NOTICES**

IN WITNESS WHEREOF, THE PARTICIPATING AGENCIES HERETO have, as of the last signature date below, executed this CCAA to be in effect as of the date of the last signatory to sign this agreement.

\_\_\_\_\_  
Owner  
Smith Creek Ranch LTD

\_\_\_\_\_  
Date

\_\_\_\_\_  
Field Supervisor  
U.S. Fish and Wildlife Service

\_\_\_\_\_  
Date

## Literature Cited

- Baruch-Mordo, S., J.S. Evans, J.P. Severson, D.E. Naugle, J.D. Maestas, J.M. Kiesecker, M.J. Falkowski, C.A. Hagan, and K.P. Reese. 2013. Saving sage-grouse from the trees: a proactive solution to reducing a key threat to a candidate species. *Biological Conservation* 167:233–241.
- Braun, C.E. 1998. Sage grouse declines in western North America: what are the problems? *In* Proceedings of the Western Association of State Fish and Wildlife Agencies (WAFWA), pp. 139–156.
- Bui, T.D., J.M. Marzluff, and B. Bedrosian. 2010. Common raven activity in relation to land use in western Wyoming: Implications for greater sage-grouse reproductive success. *Condor* 112:65–78.
- Cagney, J., E. Bainter, B. Budd, T. Christiansen, V. Herren, M. Holloran, B. Rashford, M. Smith, and J. Williams. 2010. Grazing influence, objective development, and management in Wyoming's greater sage-grouse habitat with emphasis on nesting and early brood rearing. University of Wyoming, Laramie, Wyoming. 58 pp.
- Chambers J.C. and M. Pellant. 2008. Climate change impacts on northwest and intermountain United States rangelands. *Rangelands* 30:29–33.
- Chambers, J.C., N. Devoe, and A. Evenden. 2008. Introduction. Pages 1–8 in J.C. Chambers, N. Devoe, and A. Evenden (eds.) Collaborative Management and Research in the Great Basin — Examining the Issues and Developing a Framework for Action. General Technical Report RMRS-GTR-204. U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado.
- Christiansen, T. 2009. Fence marking to reduce greater sage-grouse (*Centrocercus urophasianus*) collisions and mortality near Farson, Wyoming – summary of interim results. Wyoming Game and Fish Department, Cheyenne, Wyoming. 3 pp.
- Coates, P.S., J.W. Connelly, and D.J. Delehanty. 2008. Predators of greater sage-grouse nests identified by video monitoring. *Journal of Field Ornithology* 79:421–428.
- Commons, M.L., R.K. Bayback, and C.E. Braun. 1999. Sage-grouse response to pinyon-juniper management. USDA Forest Service Proceedings Rocky Mountain Research Station-P-9, pp. 238–239.
- Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage-grouse populations and their habitats. *Wildlife Society Bulletin* 28:967–985.
- Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation assessment of greater sage-grouse and sagebrush habitats: Report to the Western Association of Fish and Wildlife Agencies (WAFWA). 610 pp.

- Crawford, J.A., R.A. Olson, N.E. West, J.C. Mosley, M.A. Schroeder, T.D. Whitson, R.F. Miller, M.A. Gregg, and C.S. Boyd. 2004. Ecology and management of sage-grouse and sage-grouse habitat. *Journal of Range Management* 57:2–19.
- Hagen, C.A., J.W. Connelly, and M. A. Schroeder. 2007. A meta-analysis of greater sage-grouse *Centrocercus urophasianus* nesting and brood-rearing habitats. *Wildlife Biology* 13 (Suppl. 1):42-50.
- Knick, S.T., S.E. Hanser, R.F. Miller, D.A. Pyke, M.J. Wisdom, S.P. Finn, E.T. Rinkes, and C.J. Henny. 2011. Ecological influence and pathways of land use in sagebrush *in* Knick, S.T. and J.W. Connelly, eds., *Greater Sage-Grouse: ecology of a landscape species and its habitats*. University of California Press, Berkeley, California, pp. 203–252.
- Manier, D.J., D.J.A. Wood, Z.H. Bowen, R.M. Donovan, M.J. Holloran, L.M. Juliusson, K.S. Mayne, S.J. Oyler-McCance, F.R. Quamen, D.J. Saher, and A.J. Titolo. 2013. Summary of Science, Activities, Programs, and Policies That Influence the Rangeland Conservation of Greater Sage-Grouse (*Centrocercus urophasianus*). U.S. Geological Survey, Open-File Report 2013–1098. 151 pp. plus appendices.
- Manier, D.J., Z.H. Bowen, M. L. Brooks, M.L. Casazza, P.S. Coates, P.A. Deibert, S.E. Hanser, and D.H. Johnson. 2014. Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review. U.S. Geological Survey, Open-File Report 2014–1239. 14 pp.
- Miller, R.F., S.T. Knick, D.A. Pyke, C.W. Meinke, S.E. Hanser, M.J. Wisdom, and A.L. Hild. 2011. Characteristics of sagebrush habitats and limitations to long-term conservation. *In* *Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats*. *Studies in Avian Biology* 38:145–184.
- Natural Resources Conservation Service (NRCS). 2007. Species Habitat Evaluation for the Greater Sage Grouse in Nevada. NV-ECS-34. 3 pp.
- Natural Resources Conservation Service (NRCS). 2010. Nevada Monitoring Methods and Protocols for the Sage-grouse Initiative. 4 pp.
- Neilson, R.P., J.M. Lenihan, D. Buchelet, and R.J. Drapek. 2005. Climate change implication for sagebrush ecosystems. *Transactions of the 70<sup>th</sup> North American Wildlife and Natural Resources Conference* 70:145–159.
- Nevada Department of Wildlife (NDOW). 2011. Greater Sage-grouse Lek Database. Reno, Nevada.
- Schroeder, M.A., J.R. Young, and C.E. Braun. 1999. Sage grouse (*Centrocercus urophasianus*) *in* Poole, A.W. and F. Gill, eds. *The Birds of North America*, No. 425. Ithaca. New York. 28 pp.

- Smith, S.D., T.E. Huxman, S.F. Zitzer, T.N. Charlet, D.C. Housman, J.S. Coleman, L.K. Fenstermaker, J.R. Seemann, and R.S. Nowak. 2000. Elevated CO<sub>2</sub> increases productivity and invasive species success in an arid ecosystem. *Nature* 408:79–82.
- Smith Creek Ranch LTD and Natural Resources Conservation Service (NRCS). 2010. Smith Creek Ranch Conservation and Grazing Plan. Prepared by Natural Resources Conservation Service, Yerington, Nevada.
- Stevens, B.S., K.P. Reese, J.W. Connelly, and D.D. Musil. 2012. Greater sage-grouse and fences: does marking reduce collisions? *Wildlife Society Bulletin* 36:297-303.
- U.S. Bureau of Land Management (BLM). 1999. Desatoya Mountains Ecosystem Management Plan. Battle Mountain Field Office, Battle Mountain, Nevada, and Carson City Field Office, Carson City, Nevada. 47 pp. plus appendices.
- U.S. Bureau of Land Management. 2012. Final Environmental Assessment Desatoya Herd Management Gather Plan Phase of the Desatoya Mountains Habitat Resiliency, Health, and Restoration Project. Carson City District, Stillwater Field Office, Carson City, Nevada. 6 pp.
- U.S. Bureau of Land Management and U.S. Forest Service. 2013. Nevada and Northeastern California Greater Sage-Grouse Draft Land Use Plan Amendment and Environmental Impact Statement. Vol. 1 and 2. Reno, Nevada and Sacramento, California.
- U.S. Fish and Wildlife Service. 2003. Draft Candidate Conservation Agreements with Assurances Handbook. 46 pp.
- Wisdom, M.J., M.M. Rowland, B.C. Wales, M.A. Hemstrom, W.J. Hann, M.G. Raphael, R.S. Holthausen, R.A. Gravenmier, and T.D. Rich. 2002. Modeled effects of sagebrush-steppe restoration on greater sage-grouse in the interior Columbia Basin, U.S.A. *Conservation Biology* 16:1223–1231.

#### Federal Register Citations

- 64 FR 32726 – Sage Harbor Agreements and Candidate Conservation Agreements With Assurances; Final Rule. June 17, 1999.
- 68 FR 15100 – Policy for Evaluation of Conservation Efforts When Making Listing Decisions; Announcement of Final Policy. March 28, 2003.
- 69 FR 24084 – Safe Harbor Agreements and Candidate Conservation Agreements With Assurances; Revisions to the Regulations; Final Rule. May 3, 2004.
- 75 FR 13909 - Endangered and Threatened Wildlife and Plants; 12-Month Findings for Petitions to List the Greater Sage-grouse (*Centrocercus urophasianus*) as Threatened or Endangered; Proposed Rule. March 23, 2010.

*In litt.* References

- Espinosa, S. 2014a. Email dated March 3, 2014, from Shawn Espinosa, Upland Game Staff Biologist, Nevada Department of Wildlife, Reno, Nevada, to Steve Abele, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada. Subject: Desatoya PMU pop estimates. 2 p.
- Espinosa, S. 2014b. Email dated March 10, 2014, from Shawn Espinosa, Upland Game Staff Biologist, Nevada Department of Wildlife, Reno, Nevada, to Steve Abele, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada. Subject: Desatoya PMU pop estimates. 4 p.
- Lossing, S. 2013a. Email dated August 19, 2013, from S. Lossing, Assistant Ranch Manager, Smith Creek Ranch LTD, Nevada, to M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada. Subject: CCAA questions answered. 1 p.
- Lossing, S. 2013b. Email dated December 3, 2013, from S. Lossing, Assistant Ranch Manager, Smith Creek Ranch LTD, Nevada, to M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada. Subject: Re: CCAA information. 2 pp.
- Lossing, S. 2013c. Email dated December 3, 2013, from S. Lossing, Assistant Ranch Manager, Smith Creek Ranch LTD, Nevada, to M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada. Subject: Legal descriptions of fields. 12 pp.
- U.S. Bureau of Land Management. 2005. Grazing permit for Smith Creek Ranch Co. LTD for Edwards Creek, Carson and Porter Canyon Allotments. Printed March 9, 2005. 3 pp.

Personal Communications

- Coombs, Duane. 2013a. Personal communication between D. Coombs, Ranch Manager, Smith Creek Ranch LTD, Nevada, and M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada, regarding acreage of enrolled ranch lands on March 28, 2013. 1 p.
- Coombs, Duane. 2013b. Personal communication between D. Coombs, Ranch Manager, Smith Creek Ranch LTD, Nevada, and M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada, regarding greater sage-grouse use of ranch fields on February 7, 2013. 2 pp.
- Coombs, Duane. 2013c. Personal communication between D. Coombs, Ranch Manager, Smith Creek Ranch LTD, Nevada, and M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada, regarding numbers of greater sage-grouse on ranch lands on February 7, 2013. 1 p.
- Espinosa, Shawn. 2013. Telephone Conversation between S. Espinosa, Wildlife Biologist, Nevada Department of Wildlife, Reno, Nevada, and M. Haworth, Wildlife Biologist, U.S. Fish and Wildlife Service, Reno, Nevada, regarding greater sage-grouse lek data on August 22, 2013. 1 p.



Appendix A. Policy for the Evaluation of Conservation Efforts (PECE) criteria and application to the Smith Creek Ranch LTD CCAA.

<b>PECE Criteria: Certainty - Implementation</b>	<b>Location in Document</b>
<p>1. 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.</p>	<p>Implementation and funding will be the responsibility of each respective party's resources. The enrolled landowner will provide private funding and in-kind services to the extent possible. Implementation of conservation measures may also be funded through various governmental programs and these discussions can be found on pages 12-13, 32-33, 47-51, and 56. The Implementation Schedule can be found on pages 24-32.</p>
<p>2. The legal authority of the party(ies) to the agreement or plan to implement the formalized conservation effort, and the commitment to proceed with the conservation effort, are described.</p>	<p>These discussions can be found on pages 4-5. The applicant, in signing the CCAA, indicates his authority to implement the plan. In addition, the other party, in signing the CCAA, helps to ensure that the CCAA will be implemented. Compliance with the CCAA is a condition of the permit. The signatories to the CCAA can be found on pages 57.</p>
<p>3. The legal procedural requirements (e.g., environmental review) necessary to implement the effort are described, and information is provided indicating that fulfillment of these requirements does not preclude commitment to the effort.</p>	<p>The Service is responsible for determining if the CCAA is consistent with applicable Federal, State, and Tribal laws and regulations. The applicant is responsible for obtaining other authorizations if necessary under State, Federal, or local laws and regulations to carry out the activities in the CCAA. This discussion can be found on page 56.</p>
<p>4. Authorization (e.g., permits, landowner permission) necessary to implement the conservation effort are identified, and a high level of certainty is provided that the party(ies) to the agreement or plan that will implement the effort will obtain these authorizations.</p>	<p>A private landowner (applicant) wishes to enter into this agreement voluntarily, thus providing permission to implement this effort. The applicant, in signing the CCAA, helps to ensure that the CCAA will be implemented. The signatories to the CCAA can be found on pages 57.</p>
<p>5. The type and level of voluntary participation necessary to implement the conservation effort is identified, and a high level of certainty is provided that the party(ies) to the agreement or plan that will implement the conservation effort will obtain that level of voluntary participation.</p>	<p>The applicant, in signing the CCAA, helps to ensure that the CCAA will be implemented. Compliance with the CCAA is a condition of the permit. The signatories to the CCAA, which indicate each party's commitment, can be found on pages 57. Failure by the applicant to meet the specified obligations may be reason for suspension or revocation of the permit.</p>
<p>6. Regulatory mechanisms (e.g., laws, regulations, ordinances) necessary to implement the conservation effort are in place.</p>	<p>We are unaware of any new mechanisms needed to implement the CCAA.</p>
<p>7. A high level of certainty is provided that the party(ies) to the agreement or plan that will implement the conservation effort will obtain the necessary funding.</p>	<p>Funding will be the responsibility of each respective party's resources. The enrolled landowner will provide private funding and in-kind services to the extent possible. Implementation of</p>

	conservation measures may also be funded through various governmental programs and these discussions can be found on pages 12-13, 32-33, 47-51, and 56. The Implementation Schedule can be found on pages 24-32.
8. An implementation schedule (including incremental completion dates) for the conservation effort is provided.	The Implementation Schedule can be found on pages 24-32.
9. The conservation agreement or plan that includes the conservation effort is approved by all parties to the agreement or plan.	The signatories to the CCAA can be found on pages 57.
<b>PECE Criteria: Certainty - Effectiveness</b>	<b>Location in Document</b>
1. The nature and extent of threats being addressed by the conservation effort are described, and how the conservation effort reduces the threats is described.	These discussions can be found on pages 14-23, and 34-41.
2. Explicit incremental objectives for the conservation effort and dates for achieving them are stated.	Incremental objectives can be found in the Implementation Schedule on pages 24-32.
3. The steps necessary to implement the conservation effort are identified in detail.	The steps are identified and can be found in the Implementation Schedule on pages 24-32.
4. Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, and standards for these parameters by which progress will be measured are identified.	These discussions can be found on pages 47-51.
5. Provisions for monitoring and reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort are provided.	Provisions for monitoring and reporting can be found on pages 47-51 and in Appendix E.
6. Principles of adaptive management are incorporated.	Adaptive management discussions can be found on pages 12, 16, 45, 47, 50, and 52.

**Appendix B. Legal Description of Enrolled Lands on Smith Creek Ranch LTD (Lossing in litt. 2013c).**

<b>Smith Creek, Lander County</b>		
<i>Field</i>	<i>Township and Range</i>	<i>Portions of Sections</i>
Big Reservoir	T18N R38E T18N R39E	36; 31
Fish Pond	T18N R39E	31
Mares Pasture	T18N R39E	31
Raising Pond	T18N R39E	31
Leo's Pasture	T18N R39E	31
Horse	T18N R39E	32
Swamp	T18N R39E	32
Rock Field	T18N R39E	32, 33
South Rock	T18N R39E	32, 33
Derrick	T18N R39E	33
Haystack	T18N R39E	33
Lower Meadow	T18N R39E T17N R39E	33; 3, 4
Brush	T18N R39E T17N R39E	33; 3, 4
BB Unfenced HQ South	T17N R39E	3, 4
CC Unfenced HQ North	T18N R39E	31, 32, 33
Smith Creek	T18N R38E	35
Billie Canyon	T18N R38E	33
Upper Billie Canyon	T18N R38E	33
<b>Edwards Creek, Churchill County</b>		
<i>Field</i>	<i>Township and Range</i>	<i>Portions of Sections</i>
Lower Edwards Creek	T19N R38E	29, 32
Edwards Creek	T18N R38E	4, 9, 10
Upper Edwards Creek	T18N R38E	27, 28
Topia	T18N R38E	20, 21



Appendix C. NDOW survey data for five greater sage-grouse leks in the vicinity of Smith Creek Ranch LTD enrolled lands. This table is based on NDOW's 2011 lek database and Shawn Espinosa, NDOW wildlife biologist, pers. comm. on August 22, 2013.

Lek Name/Population Management Unit	Lek ID No.	County	Survey Year	Lek Status	No. Males Observed
Cedar Creek/Desatoya	DESA-008	Churchill			
			2013	Active	0
			2012	Active	0
			2011	Active	0
			2010	Active	4
			2009	Active	0
			2008	Active	9
			2007	Active	0
			2006	Active	1
			2005	Active	3
			2002	Active	1
			2000	Active	1
			1999	Unknown	0
North Topia/Desatoya	DESA-007	Churchill			
			2013	Unknown	Not surveyed
			2012	Unknown	Not surveyed
			2011	Active	0
			2010	Active	0
			2009	Active	0
			2008	Active	0
2006	Active	9			
South Topia/Desatoya	DESA-006	Churchill			
			2013	Unknown	Not surveyed
			2012	Unknown	Not surveyed
			2011	Active	0
			2010	Active	0
			2009	Active	0
			2008	Active	0
2006	Active	6			
Edwards Creek/Desatoya	DESA-005	Churchill			
			2013	Active	0
			2012	Active	23
			2011	Active	6
			2010	Active	5
			2009	Active	0
			2008	Active	10
			2006	Active	26

Smith Creek/Desatoya	DESA-003	Lander			
			2013	Active	12
			2012	Active	26
			2011	Active	33
			2010	Active	25
			2009	Active	25
			2008	Active	26
			2007	Active	28
			2006	Active	26
			2005	Active	27
			2004	Active	27
			2003	Active	27
			2002	Active	26
			2001	Active	27
			2000	Active	40

Appendix E. Smith Creek Ranch LTD conservation measures and biological monitoring effort characteristics. Please also see CCAA Table 5 for additional monitoring effort characteristics.

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Big Reservoir</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Rebuild/repair perimeter fence (wildlife friendly); remove portion of old fence	Photo; Photo	Immediately before and after full implementation of <b>both</b> actions	Smith Creek Ranch
	Installation of grade stabilization structure(s)	Photo	Immediately before and after implementation of each structure	Smith Creek Ranch
	Streambank protection due to grazing plan	Photo; Photo Point Trend	Immediately before and after implementation; Every 2 years during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Report number of sage-grouse injuries or mortalities	Before and after implementation; In annual report to Service	Smith Creek Ranch
	Remove pinyon/juniper trees	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after full implementation; Every 5 years during last week of July to first week of August; Before and then every 5 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after full implementation; Every 3 years during last week of July to first week of August; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after full implementation; Every 3 years during last week of July to first week of August; Before and then every 3 years	All 3 methods responsibility of Smith Creek Ranch

			during last week of July to first week of August	
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Fish Pond</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of September to first week of October	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report to Service	Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Mares Pasture</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Before and then every 10 years during last week of September to first week of October	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report to Service	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of September to first week of October	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Raising Pond</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Before and then every 10 years during last week of September to first week of October	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of September to first week of October	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Leo's Pasture</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of September to first week of October	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of September to first week of October	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Horse Pasture</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Swamp</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Rock House</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Haying after June 1-15 <sup>th</sup> and between 10 am and 6 pm	Indicate number of sage-grouse injuries or mortalities to Service	In annual report	Smith Creek Ranch
	Interseed field with legumes/alfalfa to achieve 5-15% composition	Visual estimation	Before implementation then every 5-7 years during last week of July to first week of August	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>South Rock</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Before and then every 10 years during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Haying after June 1-15 and between 10 am and 6 pm	Indicate number of sage-grouse injuries or mortalities to Service	In annual report	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Derrick</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Before and then every 10 years during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Haying after June 1-15 and between 10 am and 6 pm	Indicate number of sage-grouse injuries or mortalities to Service	In annual report	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Haystack</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Haying after June 1-15 and between 10 am and 6 pm	Indicate number of sage-grouse injuries or mortalities to Service	In annual report	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Lower Meadow</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Haying after June 1-15 and between 10 am and 6 pm	Indicate number of sage-grouse injuries or mortalities to Service	In annual report	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Brush</b>	Implement Smith Creek Ranch LTD and NRCS Conservation Plan (2010) - grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal (treatment predominantly greasewood; sagebrush will remain)	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Interseed field with legumes/alfalfa to achieve 5-15% composition	Visual estimation	Before implementation then every 5-7 years during last week of July to first week of August	Smith Creek Ranch

Field	Conservation Measure	Monitoring Method	Time Interval	Responsible Party
BB Unfenced HQ South	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

Field	Conservation Measure	Monitoring Method	Time Interval	Responsible Party
CC Unfenced HQ North	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Before and then every 10 years during first 2 weeks of June	Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

Field	Conservation Measure	Monitoring Method	Time Interval	Responsible Party
Smith Creek	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Annually during last week of July to first week of August	Smith Creek Ranch
	Brush thinning/removal (treatment predominantly rabbitbrush; sagebrush will remain)	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Pinyon/juniper removal (to restore canyon riparian corridor)	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 5 years; Before and then every 5 years during last week of July to first week of August	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

Field	Conservation Measure	Monitoring Method	Time Interval	Responsible Party
Billie Canyon	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Before and then every 10 years during first 2 weeks of June	Smith Creek Ranch
	Pinyon/juniper removal (40 ac of Phase II and III class P/J was removed in 2008.)	Photo Point Trend; Sage-grouse Protocol	Every 5 years; Before and then every 5 years during first 2 weeks of June	Smith Creek Ranch

	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
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<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Upper Billie Canyon</b>	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Annually during first 2 weeks of June	Smith Creek Ranch
	Pinyon/juniper removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 5 years; Before and then every 5 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Spring development (spring box and 0.25 mile of pipe); install one trough and escape ramp	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 2 years; Before and then every 2 years during first 2 weeks of June	All 2 methods responsibility of Smith Creek Ranch
<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Lower Edwards Creek</b>	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Annually during first 2 weeks of June	Smith Creek Ranch
	Install fence markers	Photo; Indicate number of sage-grouse injuries or mortalities to Service	Before and after implementation; In annual report	Smith Creek Ranch
	Willow thinning	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Edwards Creek</b>	Implement BLM Desatoya Ecosystem	Sage-grouse Protocol	Before and then every 10	Smith Creek Ranch

	Management Plan (1999) -grazing plan		years during first 2 weeks of June	
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Upper Edwards Creek</b>	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Annually during first 2 weeks of June	Smith Creek Ranch
	Pinyon/juniper removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 5 years; Before and then every 5 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Brush thinning/removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 3 years; Before and then every 3 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch
	Spring protection with brush fence	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 2 years; Before and then every 2 years during first 2 weeks of June	All 2 methods responsibility of Smith Creek Ranch

<b>Field</b>	<b>Conservation Measure</b>	<b>Monitoring Method</b>	<b>Time Interval</b>	<b>Responsible Party</b>
<b>Topia</b>	Implement BLM Desatoya Ecosystem Management Plan (1999) -grazing plan	Sage-grouse Protocol	Before and then every 10 years during first 2 weeks of June	Smith Creek Ranch
	Pinyon/juniper removal	Photo; Photo Point Trend; Sage-grouse Protocol	Before and after implementation; Every 5 years; Before and then every 5 years during first 2 weeks of June	All 3 methods responsibility of Smith Creek Ranch
	Noxious weed control	Visual estimation	Annually in spring	Smith Creek Ranch

## Species Habitat Evaluation for the Greater Sage Grouse in Nevada

Landowner/Operator: \_\_\_\_\_ County: \_\_\_\_\_ Date: \_\_\_\_\_  
 Farm No.: \_\_\_\_\_ Tract: \_\_\_\_\_ USGS Quad Name: \_\_\_\_\_  
 Field(s): \_\_\_\_\_ Acres: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Assisted By: \_\_\_\_\_

FACTOR	COMPONENTS	HABITAT VALUE RATING	PRESENT	PLANNED
<b>NESTING AND BROOD-REARING HABITAT</b> <i>continued</i>				
<b>Forb and Legume                      Species Richness</b> (Assign 0.1 point for each forb species present [to a total of 1.0]. Mark each forb species present)	Agoseris ( <i>Agoseris</i> spp.)	Yarrow ( <i>Achillea</i> spp.)		
	Clover ( <i>Trifolium</i> spp.)	Microceris ( <i>Microseris</i> spp.)		
	Salsify ( <i>Tragopogon</i> spp.)	Biscuitroot ( <i>Lomatium</i> spp.)		
	Dandelion ( <i>Taraxacum</i> spp.)	Hawksbeard ( <i>Crepis</i> spp.)		
	Buttercup ( <i>Ranunculus</i> spp.)	Milkvetch ( <i>Astragalus</i> spp.)		
	Phlox ( <i>Phlox</i> spp.)	Pussytoes ( <i>Antennaria</i> spp.)		
	Sagebrush ( <i>Artemisia</i> spp.)	Buckwheat ( <i>Eriogonum</i> spp.)		
	Wild onion ( <i>Allium</i> spp.)	Prickly lettuce ( <i>Lactuca</i> spp.)		
	Sego lily ( <i>Calchortus</i> spp.)	Fleabane ( <i>Erigeron</i> spp.)		
	Lupine ( <i>Lupinus</i> spp.)	Alfalfa ( <i>Medicago</i> spp.)		
	Sweetclover ( <i>Melilotus</i> spp.)	Pricklypear ( <i>Opuntia</i> spp.)		
	Death camas ( <i>Zygadenus</i> spp.)	Western Marsh cudweed ( <i>Grnaphalium palustra</i> )		
	Broom Snakeweed ( <i>Gutierrezia</i> spp.)	Curlycup gumweed ( <i>Grindelia</i> spp.)		
	Prairie Starflower ( <i>Lithophragma</i> spp.)	Evening Primrose ( <i>Oenothera</i> spp.)		

**NOTES:**

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Appendix G. Table a. Suitable nesting and early brood-rearing habitat characteristics from Connelly *et al.* (2000).

<b>Habitat Feature</b>	<b>Habitat Use</b>	<b>Minimum Productive Site Characteristics</b>
Sagebrush canopy cover	Nesting Cover	15 percent
Sagebrush height	Nesting Cover	12 in.
Sagebrush growth form	Nesting Cover	Spreading form with few dead branches
Perennial grass and forb height	Nesting Cover	>7 in.
Perennial grass and forb cover	Nesting Cover and food	>15 percent
Forb abundance and variety	Food	High

Table b. Suitable late brood-rearing habitat characteristics from Connelly *et al.* (2000).

<b>Habitat Feature</b>	<b>Habitat Use</b>	<b>Minimum Productive Site Characteristics</b>
Sagebrush canopy cover	Cover	10 percent
Sagebrush height	Cover	15 in.
Proximity of sagebrush cover	Cover	Sagebrush cover is adjacent (<100 yards) to brood-rearing area(s)
Perennial grass and forb canopy cover	Cover and food	>15 percent
Riparian and wet meadow plant community	Food	Wetland plant species dominate wet meadow or riparian area
Riparian and wet meadow stability	Cover and food	Some bare ground maybe evident but vegetative cover dominates the site
Forb availability in uplands and wetland areas	Food	Succulent forbs are readily available in terms of distribution and plant structure

Table c. Suitable fall and winter habitat characteristics from Connelly *et al.* (2000).

<b>Habitat Feature</b>	<b>Habitat Use</b>	<b>Minimum Productive Site Characteristics</b>
Sagebrush canopy cover	Cover and food	10 percent
Sagebrush height	Cover and food	10 in. above snow level

## Species Habitat Evaluation for the Greater Sage Grouse in Nevada

Landowner/Operator: \_\_\_\_\_ County: \_\_\_\_\_ Date: \_\_\_\_\_  
 Farm No.: \_\_\_\_\_ Tract: \_\_\_\_\_ USGS Quad Name: \_\_\_\_\_  
 Field(s): \_\_\_\_\_ Acres: \_\_\_\_\_ Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Assisted By: \_\_\_\_\_

Range Inventory Worksheet (NV-ECS-01) Attached  NV-ECS-01 in Case File

**General Information:** This model is based on the habitat requirements of sage grouse in Nevada and can be used to rate nesting and brood-rearing habitat as well as winter habitat conditions. It is assumed that managing for this species benefits many other sagebrush-dependent species because of the variety of habitat conditions sage grouse require. Therefore, this model should be applied to all ecological sites with the potential to support a large component of sagebrush even if sage grouse do not presently occupy the habitat. If possible, this guide should be completed between March and July. Due to the complexity of this form, a team approach is strongly recommended.

**Guidance:** As a general rule of thumb, Sage Grouse utilize four classes of sagebrush canopy cover. These canopy cover classes are <10%, 10 to 14%, 15 to 20%, and >20%. Optimum Sage Grouse habitat consists of a mosaic of sagebrush communities having differing canopy cover classes. Ideally, one-quarter of the total vegetative landscape would fall into each of the four canopy cover categories.

### Species Habitat Evaluation: Sage Grouse

FACTOR	COMPONENTS	HABITAT VALUE RATING	PRESENT	PLANNED
<b>GENERAL HABITAT CONDITIONS</b>				
<b>Sagebrush Recruitment</b> <i>(big &amp; dwarf sagebrush)</i>	All age classes present (seedling, young, mature, and decadent)	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	Young, mature, and decadent age classes present; seedlings sparse	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	Mature and decadent age classes dominant; young sagebrush sparse; seedlings rare	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Even aged stand; seedlings rare to absent	0	<input type="checkbox"/>	<input type="checkbox"/>
<b>Pinyon/Juniper Invasion</b>	Pinyon and/or juniper trees absent	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	Pinyon and/or juniper canopy cover Trace to 5%	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	Pinyon and/or juniper canopy cover 6 to 15%	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Pinyon and/or juniper canopy cover >15%	0	<input type="checkbox"/>	<input type="checkbox"/>

**Species Habitat Evaluation: Sage Grouse** *(continued)*

FACTOR	COMPONENTS	HABITAT VALUE RATING	PRESENT	PLANNED
<b>GENERAL HABITAT CONDITIONS</b> <i>continued</i>				
<b>Disturbance that Promotes Predation</b> <i>(based on line-of-sight distance to power lines, busy roads, fences, center pivots, etc.)</i>	More than 3-miles	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	More than 1-mile and less than 3-miles	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	More than 1/2-mile and less than to 1-mile	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Less than 1/2-mile	0	<input type="checkbox"/>	<input type="checkbox"/>
<b>Grazing Management</b> <i>(including meadows, wetlands, springs, irrigated forage crops, and rangeland)</i>	Following a prescribed grazing plan and maintaining a 3- to 6-inch stubble height	0.6 to 1.0	<input type="checkbox"/>	<input type="checkbox"/>
	Livestock exclusion	0.5	<input type="checkbox"/>	<input type="checkbox"/>
	Uncontrolled livestock grazing	0 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
<b>NESTING AND BROOD-REARING HABITAT</b> <input type="checkbox"/> <i>Check if rating Nesting and Brood-Rearing Habitat</i>				
<b>Sagebrush Canopy Cover</b> <i>Big sagebrush and/or dwarf sagebrush Line-intercept transect(s) suggested Referenced to NV-ECS-1(s)</i>	15 to 25% canopy cover	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	10 to 14% <i>or</i> 26 to 35% canopy cover	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	5 to 9% <i>or</i> 36 to 40% canopy cover	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Less than 5% <i>or</i> more than 40% canopy cover	0	<input type="checkbox"/>	<input type="checkbox"/>
<b>Foliar Cover of Perennial Grasses</b> <i>Referenced to NV-ECS-1(s)</i>	More than 50% foliar cover	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	35 to 50% foliar cover	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	25 to 34% foliar cover	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Less than 25% foliar cover	0	<input type="checkbox"/>	<input type="checkbox"/>
<b>Foliar Cover of Forbs</b> <i>Referenced to NV-ECS-1(s)</i>	More than 10% foliar cover	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	5 to 10% foliar cover	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	1 to 4% foliar cover	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Less than 1% foliar cover	0	<input type="checkbox"/>	<input type="checkbox"/>
<b>Average Grass Height in the Spring</b> <i>(either residual or current-year growth)</i>	More than 7-inches <i>(where grass height is less than 7-in, a score of 1.0 may be recorded if average grass height is at least 50% of expected growth for site potential - use "NOTES" section to document rationale for scoring a 1.0 with grass height &lt;7-in)</i>	1.0	<input type="checkbox"/>	<input type="checkbox"/>
	Average height is 5 to 7-inches	0.5 to 0.9	<input type="checkbox"/>	<input type="checkbox"/>
	Average height is 3 to 4-inches	0.1 to 0.4	<input type="checkbox"/>	<input type="checkbox"/>
	Average height is less than 3-inches	0	<input type="checkbox"/>	<input type="checkbox"/>





**Appendix I. Greater Sage-grouse Observation Report for Smith Creek Ranch LTD**

Name of Observer: \_\_\_\_\_

Date of Sighting (M/D/Y): \_\_\_\_\_

Time of Sighting: \_\_\_\_\_ (circle A.M. or P.M.)

Name of Field Sighted In: \_\_\_\_\_

Location (UTM Coordinates or T/R/S): \_\_\_\_\_

Elevation: \_\_\_\_\_

Number of Males: \_\_\_\_ Number of Females: \_\_\_\_ Number of Chicks : \_\_\_\_ Number of Adults

(sex unknown): \_\_\_\_

Description of Habitat: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Weather Conditions (indicate Temperature, cloud cover, wind speed, clear or rain): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Other comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



**Appendix J. Greater Sage-grouse Hunter Report for Smith Creek Ranch LTD**

Date (month, day, year): \_\_\_\_\_

Time of Bird Collection(s): \_\_\_\_\_

Field Name Where Bird(s) Collected: \_\_\_\_\_

Location (UTM Coordinates or T/R/S): \_\_\_\_\_

Elevation: \_\_\_\_\_

Number of Males: \_\_\_\_ Number of Females: \_\_\_\_ Number of Adults (sex unknown): \_\_\_\_

Description of Habitat: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Weather Conditions (indicate Temperature, cloud cover, wind speed, clear or rain): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Other comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



**Appendix K. Greater Sage-grouse Mortality Report for Smith Creek Ranch LTD**

Name of Reporter: \_\_\_\_\_

Date of Mortality (M/D/Y): \_\_\_\_\_

Time of Mortality (if known): \_\_\_\_\_ (circle A.M. or P.M.)

Name of Field Mortality Occurred In: \_\_\_\_\_

Location (UTM Coordinates or T/R/S): \_\_\_\_\_

Elevation: \_\_\_\_\_

Number of Males: \_\_\_\_ Number of Females: \_\_\_\_ Number of Chicks: \_\_\_\_ Number of Adults  
(sex unknown): \_\_\_\_

Description of Habitat: \_\_\_\_\_

\_\_\_\_\_

Cause of Mortality (if determinable): \_\_\_\_\_

Weather Conditions (indicate Temperature, cloud cover, wind speed, clear or rain): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Other comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

