INTRASERVICE CONFERENCE OPINION FOR THE GREATER SAGE-GROUSE CANDIDATE CONSERVATION AGREEMENT WITH ASSURANCES

TAILS - #WY14FC0044

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1. DESCRIPTION OF THE PROPOSED ACTION

This section provides a brief summary of the proposed action and its scope. For more details on the proposed action, refer to the Umbrella Candidate Conservation Agreement with Assurances (CCAA) and its conservation measures. More details on the proposed action and conservation measures are also provided in the Effects section of this Conference Opinion (CO). This CO considers effects on Greater sage-grouse from actions associated with farm and ranch management practices in Wyoming and conservation measures as proposed in the CCAA. Conservation measures describe the nondiscretionary measures (for landowners to participate in the Statewide CCAA) necessary to avoid, minimize, or mitigate effects of actions on the species and its habitat.

Private landowners within the State of Wyoming have an opportunity to participate in a statewide CCAA for the greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse). Landowners participating in the CCAA may apply to the U.S. Fish and Wildlife Service (Service) for an enhancement of survival permit in accordance with section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended (ESA), and the Service's CCAA Final Rule (64 Fed. Reg. 32726, June 17, 1999). The purpose of the permit is to provide these landowners an exemption to section 9(a)(1)(b) of the ESA prohibiting "take" of the sage-grouse—in the event that this species is listed under the ESA in the future—while carrying-out otherwise lawful farm and ranch activities. Any form of "take" to an endangered species is prohibited under section 9 of the ESA, unless the "take" is covered under section 7 of the ESA or by a section 10(a)(1)(A) permit. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Because as part of the CCAA process the Service anticipates issuing permits, the Service is performing an intra-service conference opinion (under section 7 of the ESA) on the effects its action (issuance of those permits) to sage grouse. If the species is listed, this conference opinion may be adopted by the Service as a final Biological Opinion.

An Umbrella CCAA was prepared by the Service and several State, Federal, and local partners to provide Wyoming ranchers with the opportunity to voluntarily conserve sage-grouse and its habitat while carrying out their ranching activities. Private landowners applying for an enhancement of survival permit must agree to implement appropriate conservation measures from the Umbrella CCAA. Landowners will use the selected conservation measures to develop individual CCAAs specific to their enrolled properties that will be linked to the Umbrella CCAA.

The Service will provide enrolled landowners with a section 10 enhancement of survival permit in the event that the species becomes listed under the ESA in the future, as long as the conditions stated in the permit are met. Incidental take could result from the otherwise lawful activities that occur on the enrolled lands including livestock grazing and production, farm equipment operation, and recreational activities (e.g., hiking and use of recreational vehicles on and off established roads). The permit would include ESA regulatory assurances as discussed in the Service's CCAA final policy. These regulatory assurances would ensure that enrolled properties

would not need to make additional changes in land use activities, beyond those identified in the Umbrella CCAA, should the sage-grouse become listed under the ESA.

Conservation Measures
Conservation measures (CM) are actions that the landowners agree to implement to further the conservation of Candidate species and that may contribute to keeping the species from requiring full listing status under ESA: beneficial effects of CMs are taken into consideration as one of several factors in evaluating the need to list the species as threatened or endangered under the ESA. The Service will make a final listing decision in September of 2015. In this section, proposed CMs are summarized briefly.

Potential threats to the sage-grouse addressed, in part, by CMs include: habitat loss, degradation, or fragmentation; conversion of shrub-steppe communities to cropland; changes in range management emphasizing uniform grass cover; oil and gas development resulting in habitat fragmentation; urbanization; and fire management. Most of these potential threats currently occur throughout the range of the species. The Umbrella CCAA is intended to address potential threats to the species in Wyoming caused by ranching activities. Individual CCAAs on enrolled properties will remain in effect for a period of 20 years.

According to the Service's 2010 12-month finding in which we determined listing the sage-grouse was warranted but precluded by higher priorities (75FR13910), the primary threat to sage-grouse is habitat fragmentation. Therefore, in order for this CCAA to address the conservation needs of the sage-grouse, the following conservation measure must be implemented by all enrolled landowners on the enrolled portion of their property: *Maintain contiguous habitat by avoiding fragmentation (e.g., do not subdivide property, consider conservation easements).*

In addition, all enrolled landowners will agree to undertake the following measures:

(1) Avoid impacts to populations and individual sage-grouse present on their enrolled properties to the maximum extent practicable.
(2) Continue current practices identified as conserving sage-grouse.
(3) Implement all agreed upon CMs in site-specific plans within the agreed upon timeframe.
(4) Implement a conservation management plan within 12 months following approval of their individual CCAA.
(5) Provide the Service or their agreed upon representatives access to the enrolled property at mutually agreeable times to identify or monitor sage-grouse and their habitat, implement CMs, and monitor effectiveness and compliance with individual CCAAs.
(6) When requested, allow participating agency biologists to share with each other habitat and other planning or monitoring information related to the enrolled properties.
(7) Cooperate and assist with monitoring activities and other reporting requirements identified in site-specific plans.

The process for selecting appropriate CMs for each landowner/property is described in detail within the Umbrella CCAA. Conservation measures generally include: 1) maintenance, and where feasible improvement, of suitable habitat for sage-grouse, 2) designing and implementing

livestock management plans to address grazing management that are compatible with the long-term sustainability of sage-grouse populations in Wyoming, and 3) developing and implementing measures associated with ranch and range management outside the scope of grazing that are compatible with the long-term persistence of the species in Wyoming. The Umbrella CCAA contains a more in-depth discussion of conservation measures (pp. 29-36).

Under the Umbrella CCAA, an adaptive management component provides for consideration of modifications of CMs through coordination between the signatories of this CCAA. Potential modifications will be based on the results of annual monitoring and other information as it becomes available. If consensus on the proposed modifications cannot be reached, and the Service determines the existing measures will not meet the intended conservation goal, the Service may immediately suspend the permit consistent with current regulations described in 50 CFR 13.27(a). Consistent with the Umbrella CCAA and as a condition of the permit, landowners will notify the Service at least 48 hours prior to efforts that could result in take of sage grouse. This will provide the Service a reasonable opportunity to capture and translocate sage-grouse that occupy an area where these actions would occur.

2. SPECIES STATUS

In 2008, the Service initiated a status review for the sage-grouse to determine whether the species warranted listing as threatened or endangered under the ESA (73 FR 10218). Information on existing conditions, status, and threats in this conference opinion is a compilation from the Wyoming Greater Sage-grouse Conservation Plan (WGFD 2003), the Service 2005 12-month finding (70 FR 2243), the WAFWA Greater Sage-grouse Comprehensive Conservation Strategy (Stiver et al. 2006), and the Service 2010 12-month finding (75 FR 13910). We refer the reader to these source documents for a more in-depth analysis. This is the most recent information available at this time, but will likely change in the future.

The sage-grouse depends on a variety of shrub-steppe habitats throughout its life cycle, and is considered an obligate user of several species of sagebrush (e.g., Wyoming big sagebrush (*Artemisia tridentata var. wyomingensis*), mountain big sagebrush (*A. t. vaseyana*), and basin big sagebrush (*A. t. tridentata*)) (Connelly et al. 2000, Connelly et al. 2004). The sage-grouse also uses other sagebrush species such as low sagebrush (*A. arbuscula*), black sagebrush (*A. nova*), fringed sagebrush (*A. frigida*) and silver sagebrush (*A. cana*) (Connelly et al. 2004). Thus, sage-grouse distribution is strongly correlated with the distribution of sagebrush habitats. Sage-grouse exhibit strong site fidelity to breeding and nesting habitats (Connelly et al. 2004).

Productive nesting areas are typically characterized by sagebrush with an understory of native grasses and forbs, with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating (Connelly et al. 2000, Connelly et al. 2004). Sage-grouse may also use other shrub or bunchgrass species for nest sites (Connelly et al. 2000, Connelly et al. 2004). Shrub canopy and grass cover provide concealment for sage-grouse nests and young, and are critical for reproductive success (Connelly et al. 2004). Vegetation characteristics of successful nest sites

included a sagebrush canopy cover of 15-25 percent, sagebrush heights of 30-80 cm (12-31 in), and grass/forb cover of 18 cm (7 in) (Connelly et al. 2000).

All sage-grouse gradually move from sagebrush uplands to more mesic (moderately moist) areas during the late brood-rearing period (3 weeks post-hatch) in response to summer desiccation of herbaceous vegetation (Connelly et al. 2000). Summer use areas can include sagebrush habitats as well as riparian areas, wet meadows, and alfalfa fields that provide an abundance of forbs and insects for both hens and chicks (Connelly et al. 2004). Sage-grouse will use free water, although they do not require it since they obtain their water needs from the food they eat. However, natural water bodies and reservoirs can provide mesic areas for succulent forb and insect production, thereby attracting sage-grouse hens with broods (Connelly et al. 2004). Broodless hens and cocks will also use more mesic areas in close proximity to sagebrush cover during the late summer, often arriving before hens with broods (Connelly et al. 2004).

As vegetation continues to desiccate through the late summer and fall, sage-grouse shift their diet entirely to sagebrush (Connelly et al. 2004). Sage-grouse depend entirely on sagebrush throughout the winter for both food and cover. Sagebrush stand selection is influenced by snow depth, availability of sagebrush above the snow to provide cover, and, in some areas, topography (e.g. elevation, slope, and aspect) (Connelly et al. 2004, Crawford et al. 2004).

On March 23, 2010, the Service determined that the sage-grouse was warranted, but precluded from listing (75 FR 13910). The Service assigned a listing priority number (LPN) of 8 to the sage-grouse, indicating the magnitude of the threats were low to moderate, the immediacy of the threat was imminent, and that the sage-grouse has more than 1 species in its genus.

The long-term persistence of sage-grouse will depend on maintenance of intact landscapes. Sage-grouse are landscape-scale species and the destruction and fragmentation of their habitat has contributed to significant population declines over the past century. If current trends persist, many local populations may disappear in the next several decades, with remaining fragmented populations vulnerable to extinction. Based on a review of the scientific literature (see FWS March 2010 finding), threats to sage-grouse and their habitats in Wyoming may include, but are not limited, to the following specific factors.

- Habitat fragmentation is the most significant threat to the long-term persistence of sagegrouse.
- Infrastructure (e.g., powerlines, roads) can fragment sage-grouse habitat, decreasing sagegrouse use and habitat quality.
- Previously disturbed, degraded, or fragmented sage-grouse habitat that remains unrestored or unreclaimed results in a loss of sage-grouse habitat quality and quantity.
- Establishment of plant communities that do not provide suitable habitat (e.g., monocultures of non-natives) reduces sage-grouse habitat quality and quantity.
- Introduction of non-native invasive plant species can eliminate native plant communities important to sage-grouse, reducing habitat quality and quantity.
- Wildland fire can remove long-lived species such as sagebrush, reducing sage-grouse habitat quality and quantity.
- Surface water developments such as ponds may in some instances increase mosquito

habitat, resulting in increased sage-grouse mortality from disease (e.g., WNv).
- Sagebrush management (e.g., prescribed fire, chemical, or mechanical) can result in a reduction of sage-grouse habitat quality and quantity.
- Some grazing management practices may alter shrub cover and grass and forb composition, reducing sage-grouse habitat quality and quantity.
- Concentration of livestock may impact vegetation and soil structure, reducing sagegrouse habitat quality and quantity.
- Encroachment of woodland species into sage-grouse habitat can lead to a reduction of use or abandonment of habitat.
- Livestock, humans, and vehicle activity can physically disturb birds and cause them to leave leks or abandon nests (i.e., direct impact to nests and brooding hens), resulting in decreased reproductive success.
- While they can be an important wildlife and livestock management tool, water diversions and spring developments can dry up wet meadow and riparian areas, reducing sagegrouse habitat quality.
- Some farm and ranch facilities can increase opportunities for predation of sage-grouse and sage-grouse nests by providing additional raptor perches or human attractants such as dead piles or garbage dumps that attract mammalian and avian predators.
- Application of insecticides can remove insects important to sage-grouse, reducing sagegrouse habitat quality.
- Prolonged drought can harm plants important to sage-grouse, reducing sage-grouse habitat quality and quantity.
- Livestock watering tanks and troughs can cause sage-grouse mortality by entrapment and drowning.
- Concentrated or overabundant wildlife populations can harm plant communities important to sage-grouse, reducing habitat quality and quantity.
- Sage-grouse can collide with poorly designed or located fences, resulting in serious injury or death.

These potential threats, and CMs developed in order to address them, are described in more detail in the effects section below. While many of the threats identified are not the result of ranch management, they nevertheless provide opportunities to achieve conservation for sage-grouse on ranches in which these threats are affecting the species.

3. ENVIRONMENTAL BASELINE

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in an action area, the anticipated impacts of all proposed Federal projects in an action area that have already undergone formal or section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation process (50 CFR 402.02). Ongoing actions include agricultural production, development, livestock grazing, human infrastructure, and others. Each of these activities has the potential to affect the sage-grouse and its habitat (further discussion below).

Action Area

The total area of sagebrush habitats occupied by the sage-grouse within the State of Wyoming is approximately 43,000,000 ac (FWS unpublished GIS data): of this total, approximately 38 percent is privately-owned (17,200,000 ac), 7 percent state-owned (3,010,000 ac), 47 percent BLM-owned (20,210,000), 4 percent USFS-owned (1,720,000 ac), and 4 percent BIA-owned (1,720,000 ac), with other Federal agencies owning lesser amounts. The Umbrella CCAA covers all privately owned lands within the current range of the sage-grouse in Wyoming. However, ESA regulations require that the action area evaluated in this CO includes all areas affected directly or indirectly by the Federal actions and not merely the immediate area(s) involved in the actions (50 CFR 402.02). Because of uncertainty regarding the precise location, size, and frequency of the individual properties enrolled in the CCAA, and because many properties are adjacent to and intermixed with Federal lands, it is difficult to predict the extent of possible effects and, therefore, the appropriate scope of the action area. However, it is reasonable to assume that effects from lands encompassed within this Umbrella CCAA will extend to adjoining or nearby Federal lands; as well as any private, State, and other lands, occupied by sage-grouse. Therefore, for the purposes of this analysis, the Service considers the entire 43,000,000 ac of sagebrush habitats within the state of Wyoming as the action area (Figure 1).

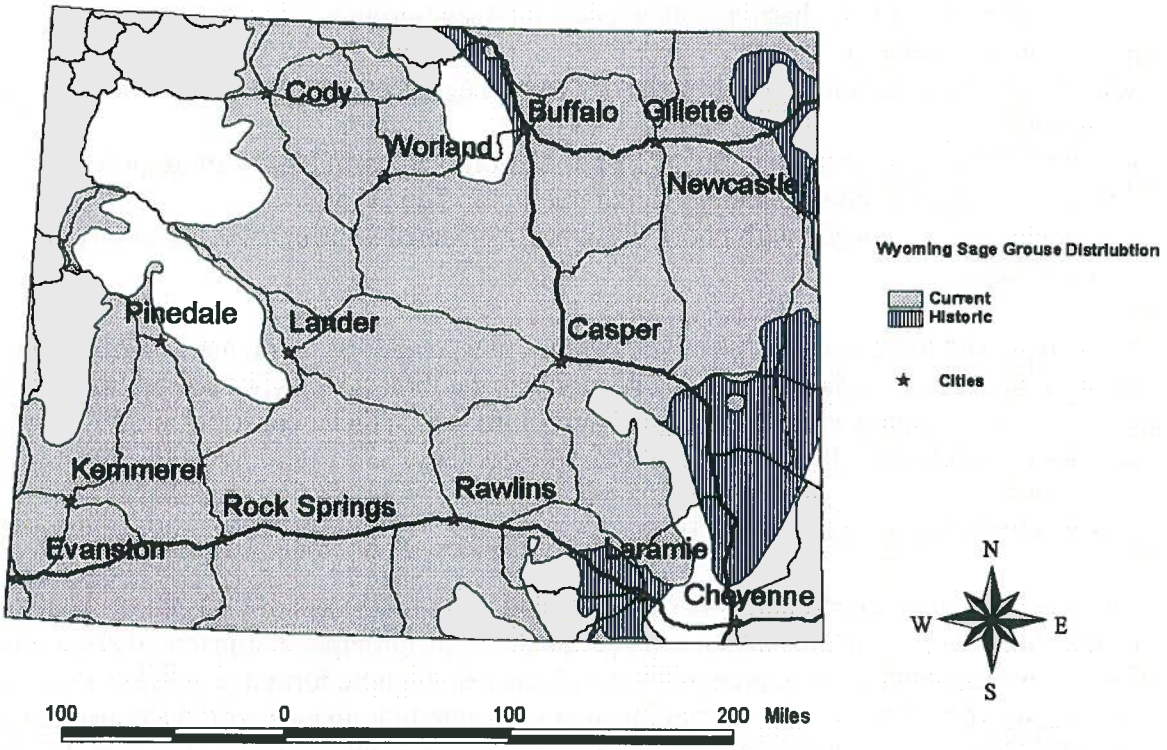

Figure 1. Wyoming sage-grouse distribution (WGFD 2003).

Description of the Action Area

Prior to settlement of western North America by European immigrants in the 19th century, sage-grouse occurred in 13 States and 3 Canadian provinces—Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, North Dakota, Nebraska, Arizona, British Columbia, Alberta, and Saskatchewan (Schroeder et al. 2004). Sagebrush habitats that potentially supported sage-grouse occurred over approximately 1,200,483 km² (463,509 mi²) before 1800 (Schroeder et al. 2004). Currently, sage-grouse occur in 11 States and 2 Canadian provinces, ranging from extreme southeastern Alberta and southwestern Saskatchewan, south to western Colorado, and west to eastern California, Oregon, and Washington (Schroeder et al. 2004). Sage-grouse have been extirpated from Nebraska, British Columbia, and possibly Arizona (Schroeder et al. 2004). Current distribution of the sage-grouse is estimated at 668,412 km² (258,075 mi²) or 56 percent of the potential pre-settlement distribution (Connelly et al. 2004, Schroeder et al. 2004).

Sage-grouse are considered a "landscape species", annually using widespread areas of sagebrush habitats. They are common throughout Wyoming because sage-grouse habitat remains relatively intact compared to other states. Nevertheless, available data sets and anecdotal accounts indicate declines in Wyoming sage-grouse populations over the last five decades. Efforts to monitor leks increased over the last half of the 20th Century to the point that in 2002, 1,164 leks were checked across Wyoming. An estimated 375 of these leks were viewed at least three times and are considered "count" leks. The remaining 789 are considered "survey" leks where activity or lack of activity was monitored. The number of checked leks equals the sum of counted leks plus surveyed leks. While the effort to monitor leks has increased along with the total number of males counted, the number of males counted per lek has declined each decade since 1949.

4. EFFECTS OF THE ACTION

The effects of the action include the direct and indirect effects of implementing the Federal action (implementing the Umbrella CCAA) on the sage-grouse, together with the effects of other activities that are interrelated or interdependent with this action, that will be added to the environmental baseline (50 CFR 402.02).

We anticipate that the Umbrella CCAA will provide a long-term, net benefit for the greater sage-grouse and its habitat on a landscape scale—although some adverse effects may occur as a result of the action. The Umbrella CCAA is intended to promote conservation efforts in the context of farm and ranch operations that will result in improvement in both habitat and long-term viability of the species on enrolled lands. Should the species become listed under the ESA, the Umbrella CCAA provides regulatory assurance to enrolled landowners that ranching operations can continue, resulting in enhanced and continued conservation efforts.

Below we provide a summary of the key effects of the land uses and human activities occurring within the action area. We describe potential threats to the sage-grouse associated with those land uses and activities, followed by a summary of key conservation measures implemented by CCAA participants to avoid, minimize and offset those potential threats. Table 2 of the

Umbrella CCAA provides a much more detailed evaluation of threats, conservation measures, and associated conservation benefits to the sage-grouse.

HABITAT FRAGMENTATION AND INFRASTRUCTURE

Habitat fragmentation is the leading cause of sage-grouse population decline rangewide, including Wyoming. Fragmentation of the landscape causes birds to leave leks or abandon nests or important habitats (i.e., direct impact to nests and brooding hens), resulting in decreased reproductive success. Infrastructure (e.g., power lines, roads, fences) can fragment sage-grouse habitat, decreasing sage-grouse use and habitat quality. Historically, portions of the native sagebrush shrub community were lost to seeded perennial grasses, irrigated agriculture, urbanization, and infrastructure associated with human development (e.g., subdivisions, oil and gas field developments). While conversion to agriculture and perennial grassland pastures may have reached its upper limits, human encroachment continues to fragment previously undisturbed habitat, and more development is expected.

In order for this CCAA to address the conservation needs of the sage-grouse, the following conservation measure must be implemented by all enrolled landowners on the enrolled portion of their property: Maintain contiguous habitat by avoiding fragmentation (e.g., do not subdivide property, consider conservation easements). By implementing this, as well as additional farm/ranch-specific CMs associated with avoiding fragmentation of the landscape, we believe that this fundamental threat sage-grouse on farm/ranch operations will be avoided to the extent possible. Because annual monitoring is required of each participating landowner, including results of implementing CMs to address threats: this provides an opportunity to implement an adaptive management component ensuring successful implementation of CMs to address potential threats to the maximum extent possible.

In order to avoid and minimize potential effects of fragmentation associated with farm and ranch activities, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) maintain contiguous habitat by avoiding fragmentation (e.g., do not subdivide property; enter into conservation easements; consolidate new roads, buildings, power lines); (b) convert electrically (AC) powered pumps or wind mills to solar; (c) avoid building new infrastructure (e.g., roads, buildings, fences) within 0.6-mile of occupied leks and within sage-grouse habitats; (d) in core areas, use the Density Disturbance Calculation Tool (DDCT) method as outlined in the Governor's Executive Order 2011-5; (e) consolidate existing roads, buildings, etc. within 0.6 mile of occupied leks or within sage-grouse habitats; and (f) if feasible, bury new and existing power lines.*

Conservation benefits of implementing these CMs: Reduces disruptions to sage-grouse activities, maintains habitat quality & quantity, maintains population connectivity and recruitment, and reduces vulnerability to predation. Removes or reduces amount of habitat fragmentation and mortality due to infrastructure across the landscape.

MANAGEMENT OF VEGETATION AND RESTORATION

Restoring Disturbed Habitats

Disturbed, degraded, or fragmented sage-grouse habitat not restored or reclaimed results in permanent loss of sage-grouse habitat quality and quantity. In order to address potential effects of disturbed habitats on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) implement restoration projects in areas with known issues/concerns; (b) rest newly seeded/planted rangeland from livestock use; (c) consult agency specialist for the amount of time to rest; and (d) work with agencies to include provisions for successful interim reclamation and complete restoration of habitats that have experienced development and/or surface disturbing activities.*

Conservation benefits of implementing these CMs: Enhances degraded habitats and reduces potential for spread of noxious weeds; increases success and reduces time necessary for successful establishment of new plantings.

Management of Non-Native Monocultures

Establishment of plant communities that do not provide suitable habitat (e.g., monocultures of non-natives such as crested wheatgrass) reduces sage-grouse habitat quality and quantity. In order to address potential effects of non-native moncultures on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) do not introduce non-natives (e.g., crested wheatgrass) tending toward monocultures on enrolled lands, except non-persistent annual grasses used for soil protection until perennial native vegetation can be established (e.g., sterile Triticale) or non-invasive beneficial forbs; and (b) work to remove the invasive, non-native vegetative component; inter-seed range with native/beneficial seed mixes.*

Conservation benefits of implementing these CMs: Reduces impacts to both sage-grouse habitat quality and quantity.

Management of Invasive and Non-Native Plant Species

Establishment of invasive plant species (including post wildland fire) reduces sage-grouse habitat quality and quantity. In order to address potential effects of invasive and non-native plant species on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) Participate in weed-control groups/processes such as Cooperative Weed Management Areas (CWMAs) or a Coordinated Resource Management (CRM); (b) work with management agencies (e.g., BLM, USFS) or Weed and Pest Districts to identify areas of invasives and work to control them; (c) work with Participating Agency (PA) to ensure suitable reclamation of weed treated areas for sage-grouse (e.g., seed mixes in sage-grouse habitat with appropriate shrub, forb, and grass components); (d) rest newly seeded/planted rangeland from livestock use; (e) consult agency specialist for amount of time to rest; use state-certified weed-free seed mixes and mulches; work with PA specialists to address post-wildland fire issues; (f) work with PA specialists to address*

and prevent wildland fire, especially if rangelands have a cheatgrass component. This is most relevant for areas adjacent to railroads, interstates, and in the Powder River Basin.

Conservation benefits of implementing these CMs: Reduces impacts to sage-grouse habitat quality and quantity, and reduces impacts from wildfires or minimizes likelihood of wildfires.

Sagebrush Management

Sagebrush management (e.g., prescribed fire, chemical, mechanical) can result in a reduction of sage-grouse habitat quality and quantity. In order to address potential effects of improper sagebrush management on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) avoid eradicating sagebrush; (b) undertake no new conversion of rangeland to cropland; (c) work with agency specialists to plan sagebrush treatments, avoiding areas currently providing sage-grouse habitat; (d) avoid fire for sagebrush treatments in areas with less than 12 in annual precipitation; and (e) work with agency specialists to develop prescribed fire management plans to address timing (e.g., spring burn versus fall), as well as the importance of treatment of the potential habitat to sage-grouse.*

Conservation benefits of implementing these CMs: Maintains or enhances sagebrush communities in terms of habitat quality and quantity.

Woodland Encroachment

Encroachment of woodland species (e.g., juniper, conifers, Russian olive, and salt cedar) into sage-grouse habitat can lead to a reduction in the amount of sage-grouse habitat, a reduction in its use, or abandonment. In order to address potential effects of woodland encroachment on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) treat/remove undesirable woodland species encroaching into sage-grouse habitats; (b) work with agency specialists to determine if treatment is needed and an appropriate treatment method; (c) any treatment should include measures to control invasive species, particularly south-facing slopes which are conducive to cheat grass and thistle establishment.*

Conservation benefits of implementing these CMs: Ensures availability of important existing sagebrush communities.

WATER DEVELOPMENT

Appropriate Surface Water Developments and Disease Management

Surface water developments such as ponds may increase mosquito habitat, resulting in increased sage-grouse mortality from disease (e.g., West Nile Virus (WNv)). This is most relevant in northeast Wyoming, where WNv is prevalent. In order to address potential effects of surface water developments and associated disease on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) treat mosquito larvae present in ponds using Bacillus thuringiensis or appropriate chemicals; (b) where new pond construction is proposed (e.g., for*

livestock or waterfowl), use innovative design for ponds (e.g., pipe water to trough offsite from a pond with steep sides to prevent establishment of aquatic vegetation); include wildlife escape ramp as needed; and (c) report to either WYGD or FWS within 24 hours any dead or sick sage-grouse found.

Conservation benefits of implementing these CMs: Reduces potential for direct mortality and/or disease transmission.

Proper Design and Placement of Livestock Water Developments

Livestock watering tanks and troughs can cause sage-grouse mortality by entrapment and drowning. Water diversions and spring developments can dry up meadow and riparian areas, reducing sage-grouse habitat quality and quantity. In order to address potential effects of water developments on farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) fit existing and new water troughs with escape ramps; (b) allow springs to be free-flowing (do not capture all of the water) at the point of diversion or source of the spring in order to maintain or enhance a wet riparian area; and (c) if necessary, fence riparian habitat with markers to protect habitat from trampling (consult agency specialist).*

Conservation benefits of implementing these CMs: Reduces potential for direct mortality and maintains or enhances availability of nesting/early brood-rearing habitats.

LIVESTOCK MANAGEMENT AND AGRICULTURAL PRODUCTION

Some grazing management practices alter shrub cover and/or grass and forb composition, reducing sage-grouse habitat quality and quantity. Concentration of livestock caused by activities such as stock tank placement, branding, and roundup may impact vegetation and soil structure, resulting in a reduction of sage-grouse habitat quality and quantity. Intensity and duration of livestock present will affect the extent of impacts. Livestock, humans, and vehicles can physically disturb birds and cause them to leave leks or abandon nests (i.e., direct impact to nests and brooding hens), resulting in decreased reproductive success; vehicles such as tractors and farm implements used for haying operations may lead to direct mortality of birds.

In order to avoid and minimize potential effects of improper livestock management on rangeland health, and to avoid potential disturbance to sage-grouse from related livestock management activities on farm and ranch operations associated with livestock, humans, and vehicles, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) Work with agency specialists to inventory vegetation and compare with the Ecological Site Description; (b) within 12 months, work with PAs to develop and implement a written conservation management plan; (c) within 24 months, develop and implement a written grazing management plan (a key component of any conservation management plan) to maintain or enhance the existing plant community as suitable sage-grouse habitat—this may be accomplished by site-specific modifications to grazing season of use, location, duration, frequency, number of animals, and/or types of livestock; (d) avoid (or rotationally utilize) known nesting and brood-rearing habitat as a location for activities that concentrate livestock such as stock tank placement, branding, and roundup; (e) place salt or*

mineral supplements in sites minimizing impacts to sage-grouse habitat—avoid placing salt or supplements within 0.25-mile of riparian habitats; (f) if necessary, fence riparian habitat with markers (consult agency specialist), to protect habitat from trampling; or implement a grazing strategy; (g) from March 1 through May 15, avoid new surface disturbing activities (e.g., roads, pipelines, corrals for branding) within 0.6-mile of the perimeter of occupied lek; (h) from March 1 through May 15, avoid disruptive activities between 6 p.m. and 8 a.m. within 0.6-mile of the perimeter of occupied leks; (i) from March 15 through June 30, avoid concentrating livestock in nesting habitat; (j) from March 15 through June 30, avoid off-trail vehicular travel in nesting habitat, unless it is essential for routine ranch management (including but not limited to: repairing fence, "doctoring" livestock, finding lost livestock).

Conservation benefits of implementing these CMs: Maintains or enhances quality of sage-grouse habitat, as well as sage-grouse reproduction and survival; and reduces disruptions to lek and nesting activity, thereby reducing abandonment and predation risk.

APPROPRIATE PLACEMENT OF FENCES

Some metrics for anticipated adverse effects were based on, or adapted from, scientific studies. For instance, models for fence collision risk (Stevens et al. 2013) and mitigation (Stevens 2011) have been developed such that we can reasonably estimate the potential exposure and mortality rate of sage-grouse. We estimated that only 9.2 percent of action area is at high risk offence collision. We derived the 9.2 percent estimate from Stevens et al. (2013) which modeled fence collision risk across 10 states where sage-grouse occur based on the average distance from leks and topographic ruggedness. The study indicated that a small proportion of the total landscape (6-14 percent) is at "high risk" of fence collisions, or greater than one collision per year. In the study, greater sage-grouse habitats in Wyoming were evaluated, and approximately 9.2 percent of that area was found to be high risk for fence collision.

However, fences, generally, are not considered to be significant threats to sage-grouse, and we do not anticipate fences resulting in a significant portion of take. While fences can be deleterious to sage-grouse populations and habitats, they also can improve habitat conditions (e.g., by protecting riparian areas providing brood-rearing areas from overgrazing) (Stevens et al. 2012). Sage-grouse mortality from fences is due to "problem fences" that take a disproportionate number of birds due to problematic placement in localized areas, such as those placed close to active leks within gently rolling terrain. Consequently, these fences can be readily identified and dealt with effectively to remove threats associated with them on a localized scale on particular farm or ranch operations. In order to address potential effects of fences associated with farm and ranch operations, the following CMs will be implemented, as appropriate, on individual farms and ranches by landowners participating in the CCAA: *(a) avoid construction of new fences within 0.6-mile of occupied leks or riparian areas where broods are known to concentrate; (b) if fencing is needed for livestock management, mark fence; and (c) consult with agency specialist to relocate, redesign (e.g., wood posts, buck and pole fences), or mark existing fences (e.g., wire markers) that occur within 0.6-mile of a lek, especially where previous collisions have been observed.*

Conservation benefits of implementing these CMs: Reduces mortalities from collisions.

Regulatory Effects Determinations
Based on the analysis of potential threats associated with farm and ranch operations, and the suite of CMs identified to address those threats, we believe that most impacts to sage-grouse habitat and take of sage-grouse individuals will be avoided to the extent practicable. It is likely, however, that all impacts to habitat and individuals cannot be avoided and that some adverse effects, including incidental take of sage-grouse, will occur on individual operations. We anticipate that in four out of five categories of threats and associated effects described above may result in take of sage-grouse, and thus require incidental take coverage if the species is listed. These categories include: 1) Habitat Fragmentation and Infrastructure; 2) Management of Vegetation and Restoration; 3) Livestock Management; 4) Placement of Fences. Consequently, the regulatory effects determination for these four categories is *likely to adversely affect* the sage-grouse.

The remaining category (Water Development) and associated actions (surface water development and disease management; design and placement of livestock water developments) are expected to have no effect, or discountable and/or insignificant effects on the species. Therefore, no incidental take is expected from this category.

Interrelated and Interdependent Effects
Interrelated activities are those that are part of the larger measures under consideration for consultation and depend on a larger measure for their justification. Interdependent activities are those that have no significant independent utility apart from the measure that is under consideration for consultation. No interrelated or interdependent effects have been identified for the proposed action.

Summary of Effects
Primarily short-term and localized adverse effects are expected to occur from farm and ranch activities implemented and covered within this CCAA. For example, activity associated with seasonal use of infrastructure such as roads may affect sage-grouse behavior. Activities associated with various vegetation management treatments (e.g., management of non-natives, monocultures, sagebrush, and woodland encroachment) may disrupt or displace birds during critical breeding, nesting or foraging periods. Vegetation disturbance may adversely affect the availability of nesting habitat, cover from predators, or prey (invertebrate) availability, and adversely affect sage-grouse. Livestock grazing may alter vegetation composition, structure, and nutrient quality; and livestock, humans, and vehicles can disturb birds and cause them to leave leks or abandon nests.

Long-term negative effects may also occur, such as permanent habitat loss or mortality of individual birds. However, proposed conservation measures are expected to avoid, minimize or offset those effects. These measures are designed to conserve habitat and reduce fragmentation—the primary threat to sage-grouse. Expected conservation benefits would outweigh the short-term negative impacts to individuals or localized areas of habitat.

Implementation of the proposed Umbrella CCAA and its conservation measures will result in strategic management of several threats known to affect the species statewide.

Furthermore, beneficial effects are expected to accrue over time. Conservation measures include standard/general avoidance and minimization measures, site-specific measures, and many considered to be best management practices for activities typically associated with farm and ranch operations in Wyoming. Generally, more restrictive conservation measures will be implemented within the best sage-grouse habitats to ensure protection or maintenance of habitat values (e.g., nesting, brood-rearing, or lek habitats). Consequently, we anticipate that the CCAA will provide a long-term net benefit for the sage-grouse and its habitat on a landscape scale within the state of Wyoming.

Methods, Assumptions, and Rationale for Anticipated Effects and Incidental Take
This section discusses some of the key methods and assumptions made to estimate impacts and incidental take from the proposed action. Estimated incidental take provided in this CO is based primarily on the risk of birds to disturbance, and the likelihood of their injury or mortality, or reduced breeding, feeding, or sheltering. We estimate risk by evaluating the potential exposure and likely response of individual birds to project-related effects described in this CO. Importantly, not all birds exposed to a particular disturbance will respond negatively such that effects reach the level of take. In other words, adverse effects may occur, such as flushing of birds during livestock management activities, but may be insignificant such that vital rates (reproduction success, survival, etc.) are not affected.

The Service assessed the adverse effects or potential risk(s) to the species and its habitat from implementation of the CCAA. Scientific data that quantify the effects of the proposed projects on sage-grouse, or gallinaceous birds, is very limited. Thus, there is uncertainty in generating specific metrics for anticipated adverse effects (such as number of expected mortalities of individuals, or numbers of habitat acres temporarily or permanently lost or temporarily affected). A complex range of factors will influence the response or fate of individual birds to impacts. Factors contributing to this uncertainty include, but are not limited to: 1) inability to accurately predict the location, frequency, timing, duration, etc. of proposed projects; 2) inability to accurately measure the nature or extent of potential effects; 2) limited ability to pinpoint the source, or combined sources, of effect; 3) accounting for confounding or stochastic events such as drought; 4) sources of risk that emerge outside private lands covered under the CCAA.

Estimated incidental take provided in this CO is based primarily on the risk of birds to disturbance, and the likelihood of their injury or mortality, or reduced breeding, feeding, or sheltering. We estimate risk by evaluating the potential exposure and likely response of individual birds to ranch-management related activities described in this CO.

To predict the number of birds potentially exposed to categories of potential impacts, we estimated bird numbers per acre (density) across the action area defined in the CCAA. First, we assumed approximately 208,000 sage-grouse are in Wyoming (FWS 2010). We also assumed that the total area of sagebrush habitats occupied by the sage-grouse within the State is approximately 43,000,000 ac. This equals a statewide average density of approximately 0.005

birds per acre of sagebrush. We assume even distribution of birds across the landscape and that all birds, at all age classes, have an equal probability of being exposed to the various impacts. We believe these assumptions result in an overestimate of take from the ranch management related actions, and thus provide a more cautious approach. Additionally, we anticipate that conservation measures (described in detail above) will minimize adverse effects including the injury and death of individual birds. For some actions, we assume that incidental take may be reduced by as much as 95 percent (i.e., the rate of mortality or injury would be 5 percent). Refer to Table 1 below for these, and other, assumptions used to estimate exposure rates and incidental take.

Table 1. Incidental Take Estimates of Greater Sage-Grouse for Proposed Actions

Category of Action	Total Use over 20-Years (Acres)[a]	Estimated Exposure to Action (Birds)[b]	Rate of Injury or Mortality (Birds)[c]	Incidental Take (Birds)[d]
Habitat Fragmentation and Infrastructure	860,000[e]	4300	215[f]	215
Management of Vegetation and Restoration	860,000[e]	4300	215[f]	215
Livestock Management & Ag. Production	15,480,000[g]	7,740[h]	1,548[i]	1,548
Placement of Fences	10,320,000[j]	4747.2[k]	807[l]	807
			Total	**2,785**

a Starting point is total acreage of private lands (17,200,000 ac) within total area of sagebrush habitats occupied by the sage-grouse in Wyoming (43,000,000 ac), with modification by Category of Action as described below, and assumes current and future use does not change.

b Calculated by multiplying total area in which birds are exposed by average bird density of 0.005 birds/acre.

c Assumes equal probability of injury/mortality across all age glasses, and that not all birds exposed to impacts from actions will be injured or killed.

d Estimated as the injury/mortality rate rounded up to the nearest whole number (individual bird).

e Area encompasses entire 38% of private lands (17,200,000 ac) within total area of sagebrush habitats occupied by sage-grouse in Wyoming (43,000,000 ac) multiplied by 5% (habitat estimated to be impacted by action).

f Assumes injury/mortality rates are reduced to 5% as a result of implementing conservation measures.

g Based on an estimate that 90% of all potentially enrolled properties within action area participate in livestock and agricultural production.

h Assumes that bird exposure is most likely to occur on 10% of enrolled lands that are grazed by livestock and lands under agricultural production where more significant impacts may be expected such that injury/mortality are more likely. For example, heavier use and more significant impacts from livestock and agricultural production would be expected in discrete, concentrated use areas such as riparian, watering areas, hay meadows, and similar areas.

i Assumes injury/mortality rates are reduced to 20% as a result of implementing conservation measures.

j Based on estimate that fences occur on 60% of all potentially enrolled private lands; i.e., 60% of 17.2 million acres have some sort of fence or exclosure located on them.
k Based on the estimate that 9.2% of the area affected by fences are high-risk collision areas (Stevens et al. 2013).
l Assumes high collision risk areas (e.g., near leks surrounded by rolling terrain) will be visually marked, or designed or sited to reduce collision risk, resulting in an 83% reduction in collision events(Stevens 2011), or a 17% injury/mortality rate.

We recognize that these estimates are based on a number of assumptions. For instance, we assumed that birds are evenly distributed across the habitat type and that all birds, at all age classes, have an equal probability of being exposed to the various practices. We feel the assumptions, in general, result in an overestimate of take from the proposed action, rather than an underestimate of those effects, and thus provide a more cautious approach. As noted above, we also expect that conservation measures including offsite mitigation will minimize adverse effects including the injury and death of individual birds.

5. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this conference opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

In general, land use activities, including agricultural activities, on non-Federal lands are expected to continue. Since current land-use activities are expected to continue for lands not enrolled under the Umbrella CCAA, many of the threats to the sage-grouse would also continue, including those related to habitat degradation. Habitat condition on lands that are not enrolled would likely remain similar to their current condition. For these areas, the species may be maintained in low numbers at scattered, isolated sites, similar to current conditions. If other landowners work cooperatively to develop and implement conservation measures similar to those proposed under the Umbrella CCAA, threats to the species would be further reduced. Any such projects would undergo separate section 7 consultation.

6. CONCLUSION

After reviewing the current status of the sage-grouse, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion that approving the Umbrella CCAA and issuing enhancement of survival permits, as proposed, is not likely to jeopardize the continued existence of the species. Primarily short-term, localized, and unavoidable adverse effects to the species and its habitat are expected to occur from projects implemented under the CCAA. No critical habitat has been proposed for these species; therefore, none will be affected.

We have reached this conclusion based on the following: The total amount of annual incidental take associated with this proposed action is 0.07 percent of the estimated 208,000 birds statewide. To place this number into context, this estimate is orders of magnitude lower than known harvest rates across the range of greater sage-grouse that have been considered to have no measurable

population impact. For example, harvest rates ranging from 7 to 11 percent of populations taken in the fall have been shown to have no measurable effect on greater sage-grouse populations the following spring; this study concluded that hunting mortality could remove 20 to 25 percent of the fall population without being additive to annual mortality (Braun and Beck, 1985). More recently, Christianson (2010) estimated that annual harvest rates within Wyoming as high as 5 percent have had no measurable effect on sage-grouse populations; and estimates of overwinter mortality rates range from 2 to 20 percent (Schroeder et al. 1999). Consequently, the effects to Greater sage-grouse in Wyoming of a total annual incidental take of 0.07 percent associated with the proposed action will not substantially alter the population's numbers, distribution or reproduction in a negative manner. In fact, as noted below much of the proposed action will improve those attributes. On that basis, we conclude that the minor negative effects of the proposed action in the action area within Wyoming are unlikely to result in an appreciable reduction in the likelihood of survival and recovery of the Greater Sage Grouse across its entire range.

As previously noted, potential threats associated with livestock grazing and ranch management activities were not identified as primary threats contributing to the need for protection of the sage-grouse under the ESA (75FR13910). Even so, conservation measures implemented through participation of the CCAA will facilitate avoidance, minimization, and off-setting of these threats across as much as 40 percent of occupied sage-grouse habitat across Wyoming depending upon participation—providing a long-term, net benefit for the sage-grouse on a landscape scale. Indeed, implementation of the proposed action and its conservation measures will result in strategic management of several threats known to affect the species and sage-grouse populations within Wyoming, including habitat loss and fragmentation. These beneficial effects are expected to accrue over time.

7. INCIDENTAL TAKE STATEMENT

Prohibitions against taking the species found in Section 9 of the ESA do not apply if, and until, the species is listed. The incidental take statement would become effective upon listing of the Greater sage-grouse and designation of critical habitat, and following adoption of this CO.

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), take that is incidental to and not intended as part of the agency action is not considered to be prohibited under the ESA provided that such take is in compliance with the terms and conditions of this Incidental Take Statement.

Estimated Incidental Take
Applying the methods and assumptions described above in the Effects section, the estimated incidental take of greater sage-grouse due to the proposed action is **2,785 birds**, an average of 139 birds per year within the action area over the 20-year life of the project. This equates to approximately 0.07 percent of the estimated 208,000 birds statewide.

Monitoring Incidental Take
Incidental take is expected to vary by property, land use type, habitat type, and other factors. Annual monitoring required as part of the CCAA provides an opportunity to track and report incidental take across all participating landowner properties during the 20-year term. Annual reports must be provided to the Service's Wyoming Field Office: if any new information indicates that the activities associated with enrolled farm and ranch operations and associated conservation measures are resulting in take levels different than that described herein, conferencing may be reinitiated to evaluate changes to the CO.

Effect of the Take
The Service has determined that this level of anticipated take is not likely to result in jeopardy to the Greater sage-grouse. Implementation of the proposed conservation measures will advance the recovery of the species and result in a net increase in available habitat to the species over the long-term. However, the Service advises the enrolled landowners implement the following reasonable and prudent measures. If this CO is adopted as a BO following a listing or critical habitat designation, these measures and their terms and conditions, will be non-discretionary.

8. REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

The Service believes that the following reasonable and prudent measures and their implementing terms and conditions are necessary and appropriate for the enrolled landowners to minimize impacts of incidental take of Greater sage-grouse. If the species is listed, in order to be exempt from the prohibitions of Section 9 of the ESA, the landowners must ensure that implementation of the CCAA complies with the following Terms and Conditions which implement the Reasonable and Prudent Measures.

Reasonable and Prudent Measures

1. The enrolled landowners shall immediately report any known injury or mortality of Greater sage-grouse individuals, or damage or loss of nests or eggs resulting from implementation of the CCAA.

2. Track incidental take (future use disturbance) by land use type with respect to the 20-year disturbance limits, and provide such information in its annual reports as described in the Umbrella CCAA.

Terms and conditions

1. Any observations or evidence of of sage-grouse injury or mortality, or damage or loss of nests or eggs, shall be reported immediately to the Service if possible, but no later than 5 days after observed take occurrence. All take will be documented in annual monitoring reports.

2. With respect to the 20-year disturbance limits, incidental take information by land use type will be provided to the Service in the annual monitoring reports as described in the CCAA.

9. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service recommendations are as follows:

1. Work with non-Federal landowners to enhance sage-grouse habitat throughout the range of these species; and
2. Work with other Federal Agencies to expand conservation measures onto Federal properties via a Candidate Conservation Agreement.

10. REINITIATION NOTICE

This concludes the Service's CO for potential effects of the proposed action. If Greater sage-grouse is listed and critical habitat is designated, a request may be made that the Service adopt the CO as a final Biological Opinion satisfying the consultation requirements under 7(a)(2) of the ESA. The request must be submitted in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information considered during the CO, the Service will adopt the CO as the BO on the project, and no further section 7 consultation will be required.

If the CO is adopted as the final consultation document, the following reinitiation conditions apply: Reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the BO; or (d) If a new species is listed or critical habitat designated that may be affected by the identified action.

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